

KALPANA CHAWLA

Unconventional clothes and bobbed hair were not the only indications of Kalpana's zest for life – this spirited young girl from Karnal wanted to fly! Her intelligence was multi-faceted, her talents varied and her interests inspiring. The path she charted from her traditional home in Haryana to NASA's elite band of astronauts is the stuff of legends.

OTHER ACK BRAVEHEARTS:

CHAND BIBI



PADMINI



RANI OF JHANSI



SULTANA RAZIA



ALSO LOOK FOR:

DRONA



EPICS & MYTHOLOGY

VASAVADATTA



INDIAN CLASSICS

THE ACROBAT



FABLES & HUMOUR

GURU ARJAN



VISIONARIES

Buy online at www.amarchitrakatha.com

"Amar Chitra Kathas are a glorious tribute to India's rich cultural heritage. These books have been an integral part of my children's early years, as they have been for many other families across India. Comics are a great way of reaching out to children, inculcating reading habits and driving their quest to learn more about our roots."

- NARAYAN MURTHY, CHIEF MENTOR, INFOSYS

BRAVEHEARTS



KALPANA CHAWLA

THE FIRST INDIAN WOMAN IN SPACE

Vol 736 | ₹50



ISBN 81-905990-0-3



9 788190 599009

KALPANA CHAWLA

NESTLED ON THE BANKS OF THE YAMUNA RIVER IS THE SMALL TOWN OF KARNAL. ALTHOUGH THIS TOWN MAY BE JUST A LITTLE DOT ON THE MAP OF INDIA, IT MANAGES TO ETCH ITS PLACE IN THE HISTORY OF THE NATION IN A MYRIAD LITTLE WAYS. NAMED AFTER KARNA, THE LEGENDARY HERO OF THE MAHABHARATA, KARNAL ALSO HAS THE HISTORIC BATTLEFIELDS OF PANIPAT AND KURUKSHETRA NEAR BY.



THE NATIONAL HIGHWAY NUMBER ONE CONNECTS KARNAL TO THE CAPITAL, NEW DELHI. IT IS THE HISTORIC GRAND TRUNK ROAD THAT CONNECTED INDIA TO THE REST OF THE WORLD. IN MORE RECENT YEARS, THE NAME OF KARNAL HAS BEEN BLAZED ACROSS THE SKIES BY A DETERMINED YOUNG WOMAN CALLED KALPANA CHAWLA.

IF WE WERE TO TRACE THE PARENTAGE OF KALPANA, IT WOULD LEAD US TO THE TURBULENT TIMES OF THE PARTITION OF THE NATION WHEN, AS A YOUNG BOY OF 16, HER FATHER FLED TO INDIA WITH HIS FAMILY, LEAVING THEIR ANCESTRAL HOME IN PAKISTAN.



WITH HORDES OF OTHERS, THEY TREKKED ACROSS THE NORTH INDIAN CITIES OF LUDHIANA, JALANDHAR, KHANNA AND AMBALA, HOPING TO SEEK THEIR FORTUNE IN DELHI, THE CAPITAL.



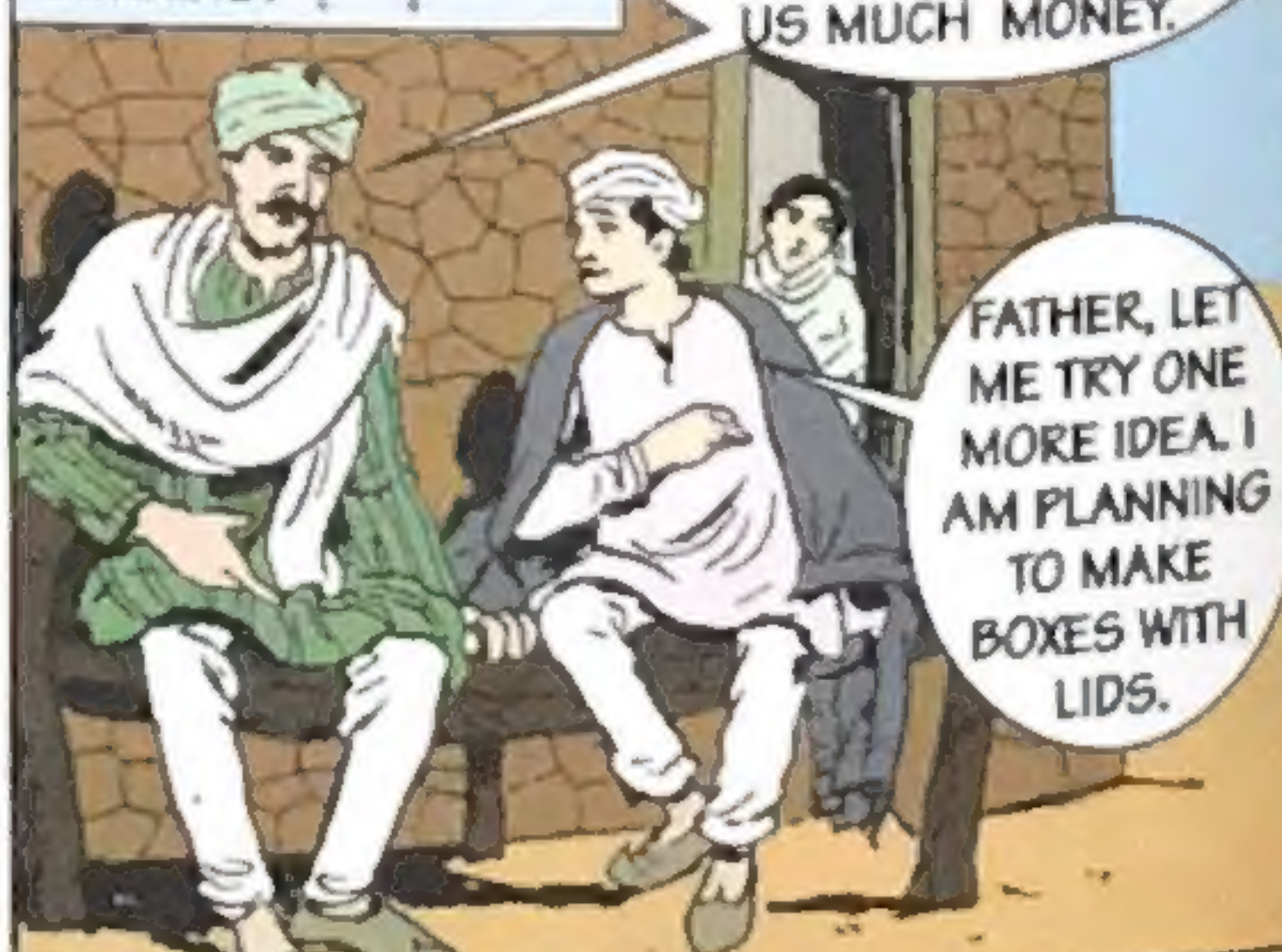
BANARSI LAL CHAWLA DECIDED TO STOP AT KARNAL WITH HIS EXTENDED FAMILY OF 20. HE WAS JUST A TEENAGER THEN, BUT HE WAS A GREAT SUPPORT TO HIS FATHER, LABHAMAL.



THEY MOVED INTO THE FIRST VACANT BUILDING THEY FOUND, AN OLD MOSQUE.



THEY TRIED A NUMBER OF ODD JOBS TO KEEP THE HOME FIRES BURNING.



WE HAVE TRIED SO MANY SMALL BUSINESSES, BUT NONE OF THEM IS FETCHING US MUCH MONEY.

FATHER, LET ME TRY ONE MORE IDEA. I AM PLANNING TO MAKE BOXES WITH LIDS.

IT WAS A STRANGE BUT WISE DECISION.

BOXES WITH LIDS? WHY ON EARTH?

WELL, THERE ARE SO MANY REFUGEES. THEY ALL NEED BOXES FOR KEEPING THEIR RATIONS!

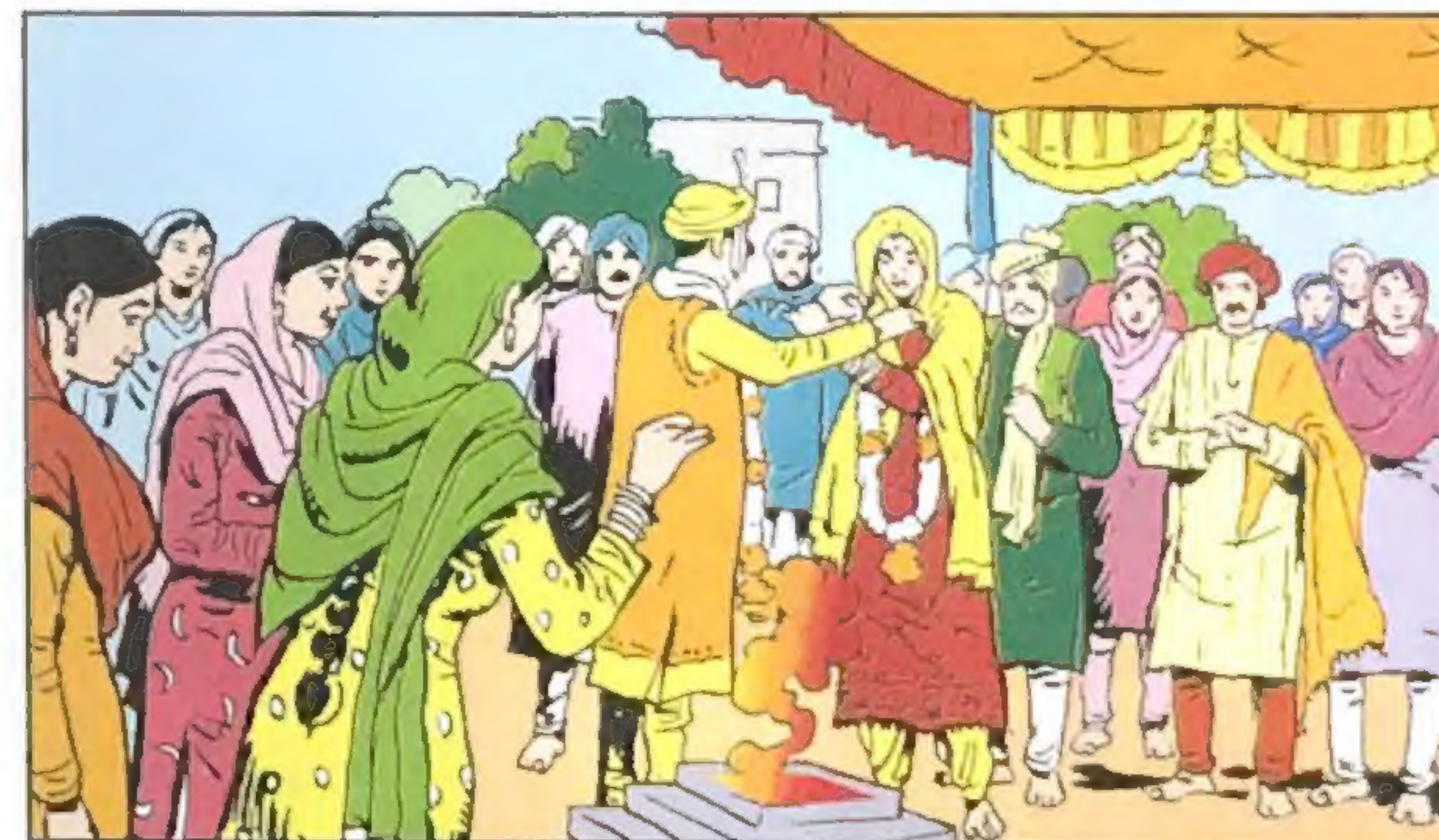


EVEN IN HIS YOUNG DAYS BANARSI LAL WAS AN ENTREPRENEUR BY NATURE.

THE FORESIGHT OF TURNING A NEED INTO AN OPPORTUNITY WORKED WELL.

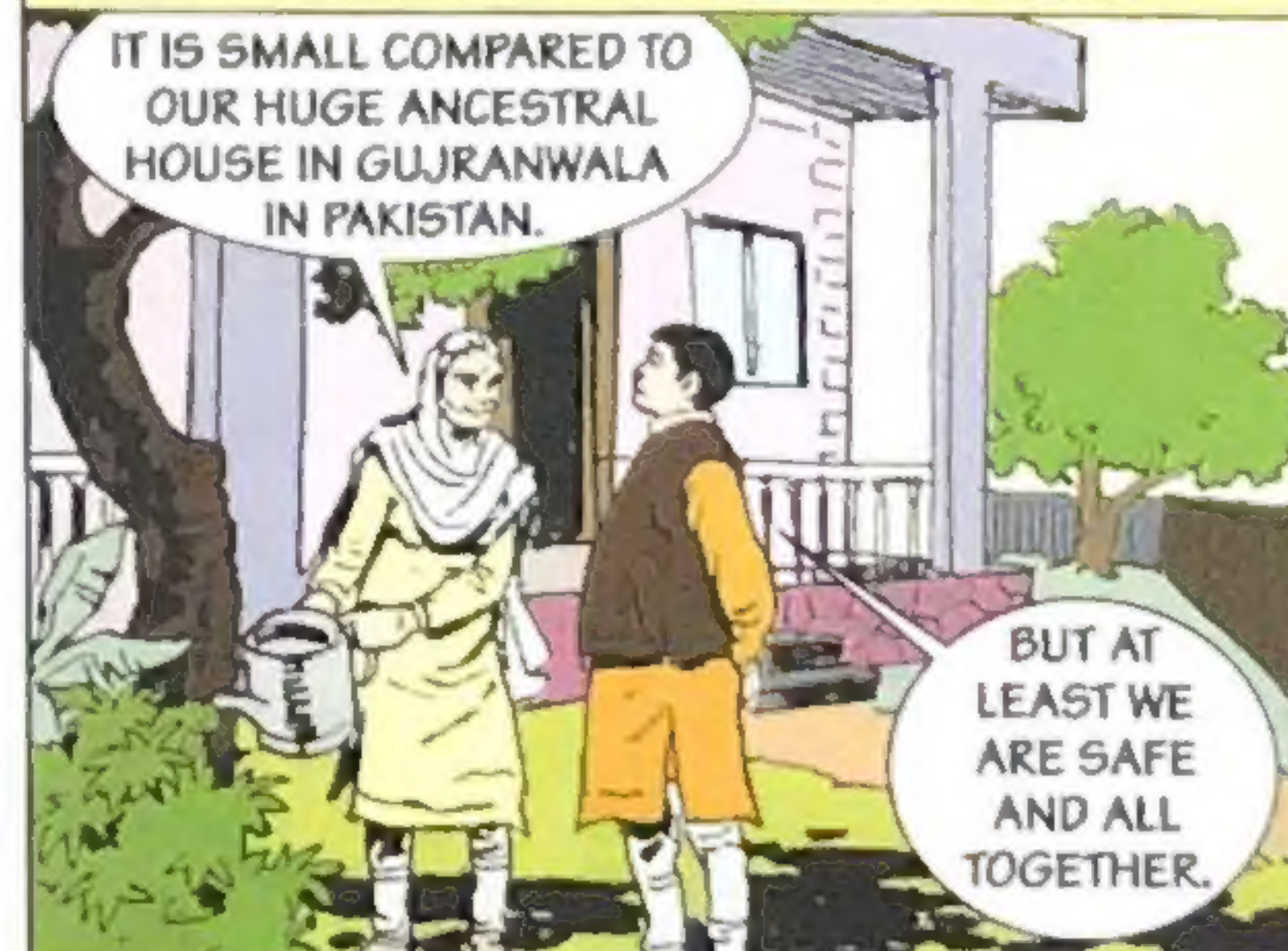
SO, HOW MANY BOXES DID YOU SELL TODAY?

QUITE A FEW AT THE RAILWAY STATION AND NOW I AM SELLING THEM TO THE SHOPKEEPERS TOO.



BANARSI LAL WAS MARRIED TO SANYOGITA, DAUGHTER OF A REPUTED PHYSICIAN, DR. KHARBANDA, WHO WAS ALSO A MIGRANT REFUGEE FROM ANOTHER PART OF PAKISTAN. IN DUE COURSE, THE BUSINESS AND THE FAMILY GREW. THEY HAD TWO DAUGHTERS, SUNITA AND DEEPA, AND A SON, SANJAY.

THE FAMILY FORTUNES TURNED AND THEY WERE ABLE TO GET A LARGE HOUSE IN THE CENTRE OF TOWN.



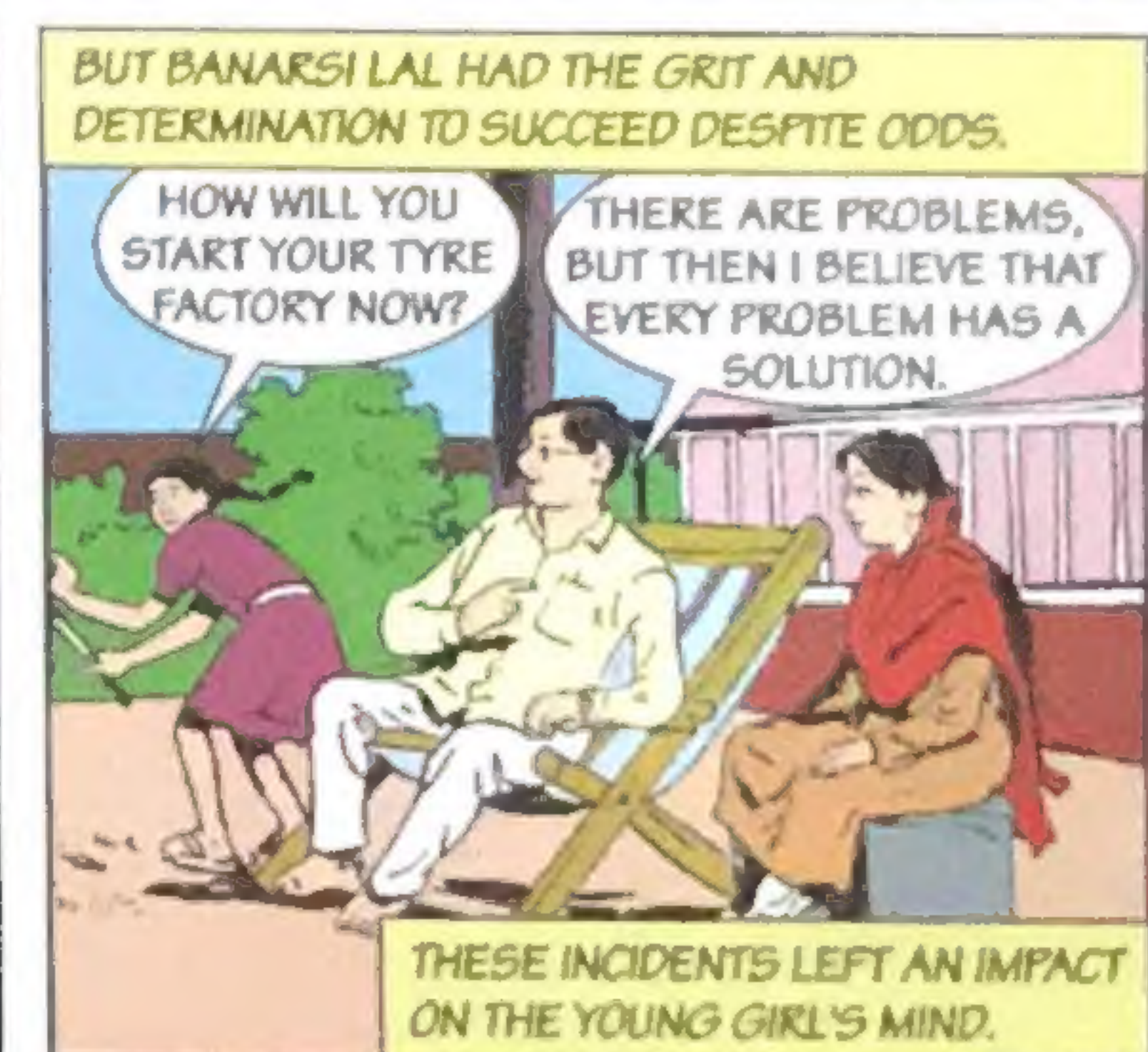
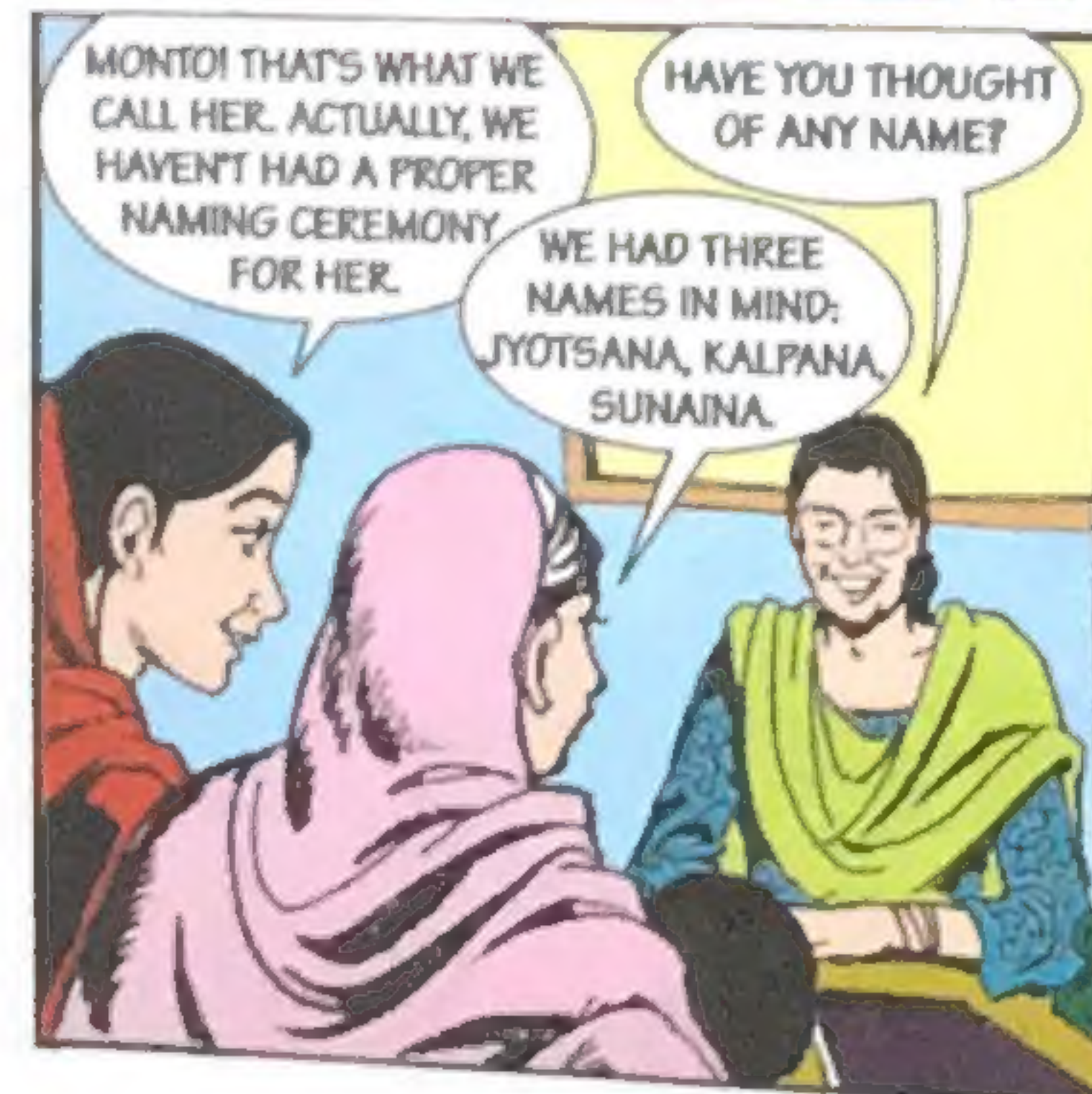
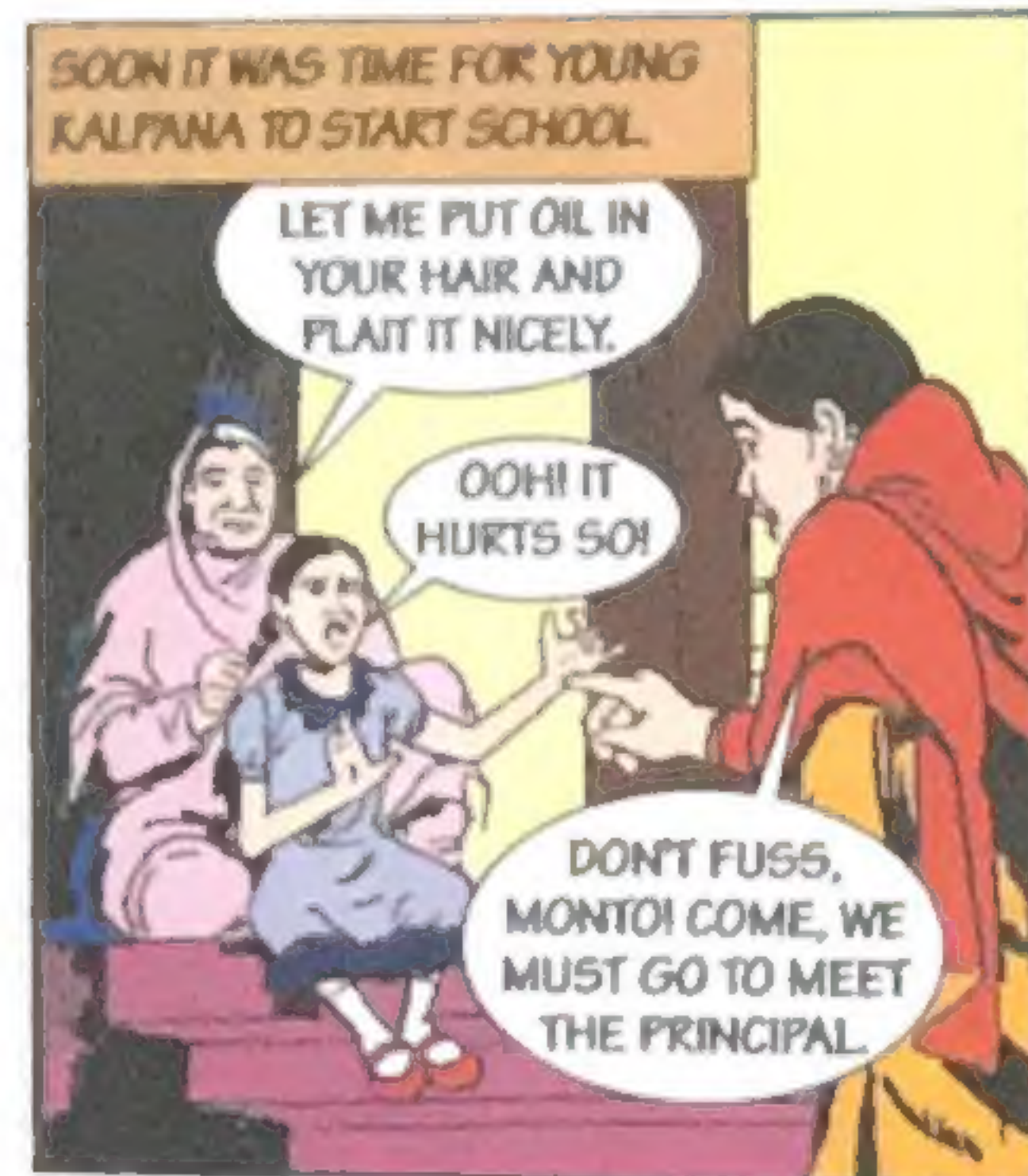
IT IS SMALL COMPARED TO OUR HUGE ANCESTRAL HOUSE IN GUJRANWALA IN PAKISTAN.

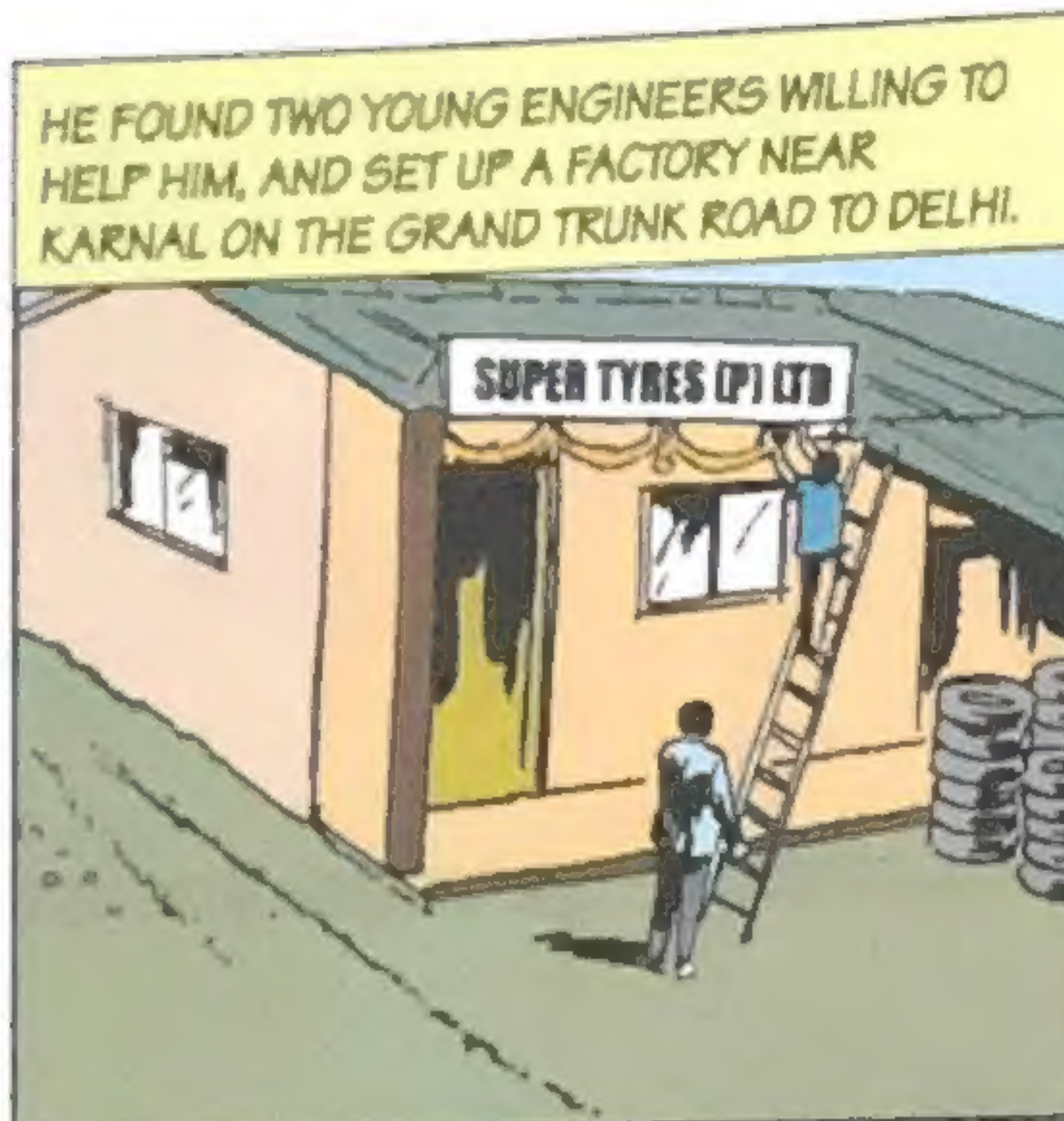
BUT AT LEAST WE ARE SAFE AND ALL TOGETHER.

SANYOGITA WAS EXPECTING HER FOURTH CHILD IN MID-1961.

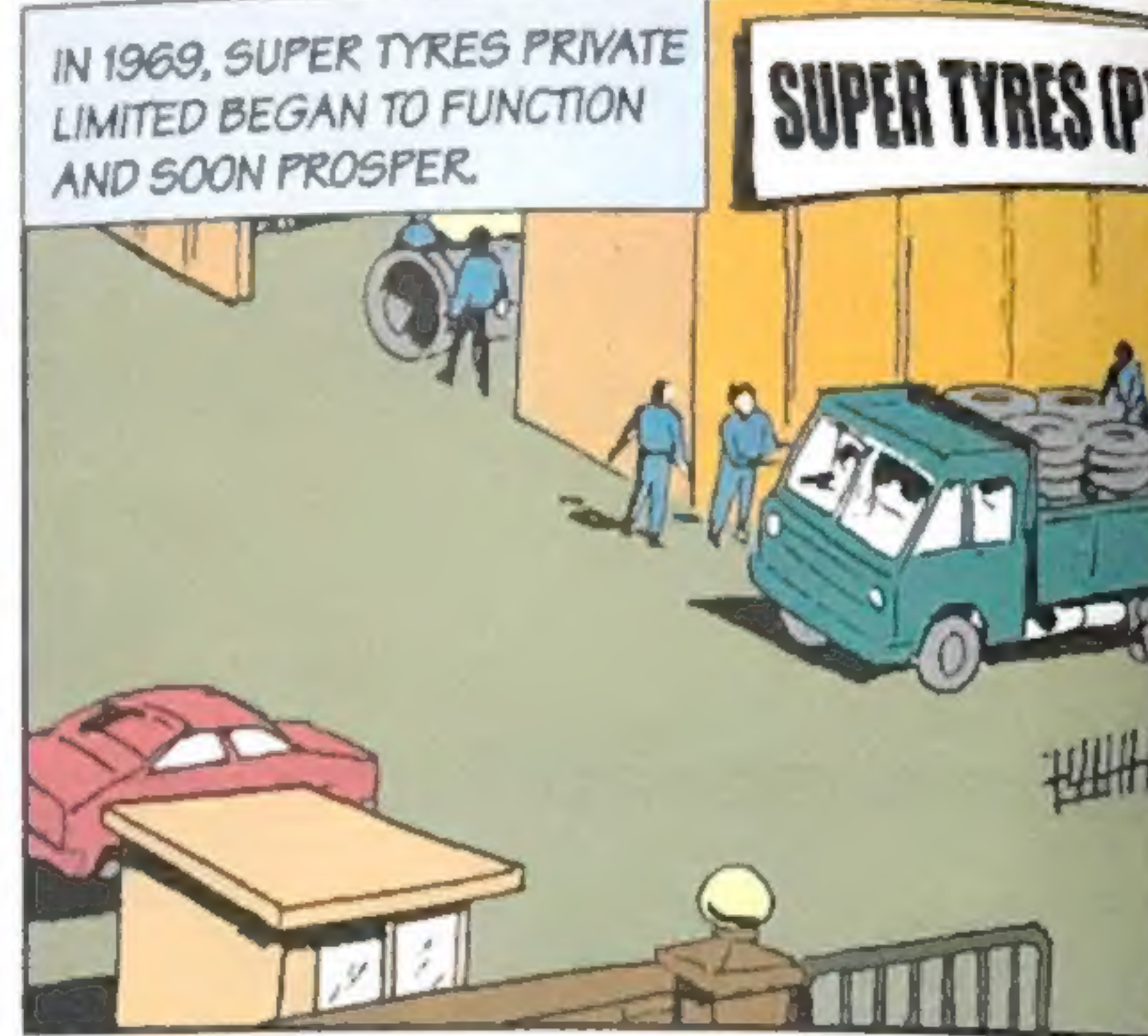
OUCH! THIS BABY REALLY KICKS HARD! MUST BE A BOY.





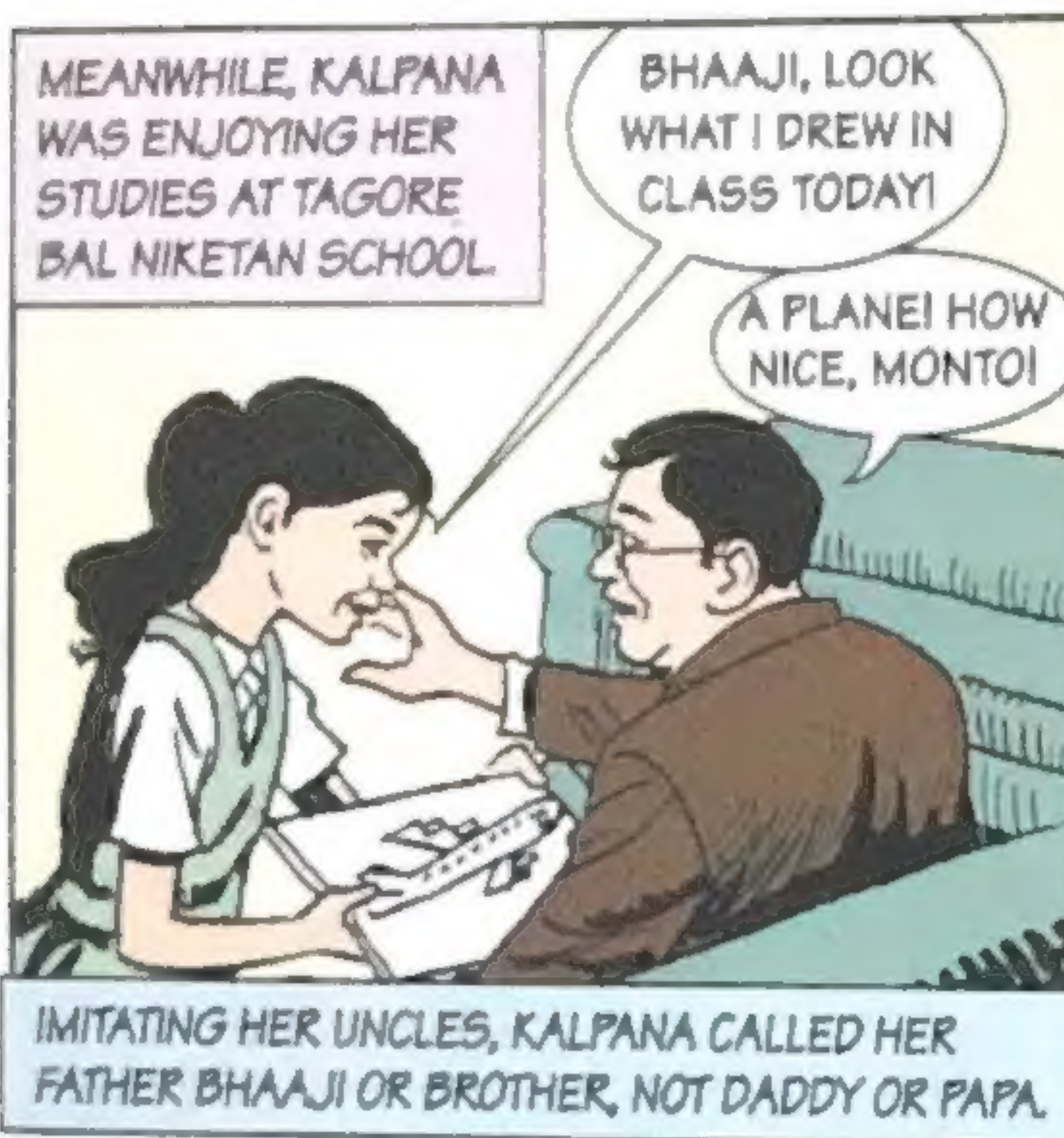


HE FOUND TWO YOUNG ENGINEERS WILLING TO HELP HIM, AND SET UP A FACTORY NEAR KARNAL ON THE GRAND TRUNK ROAD TO DELHI.



IN 1969, SUPER TYRES PRIVATE LIMITED BEGAN TO FUNCTION AND SOON PROSPER.

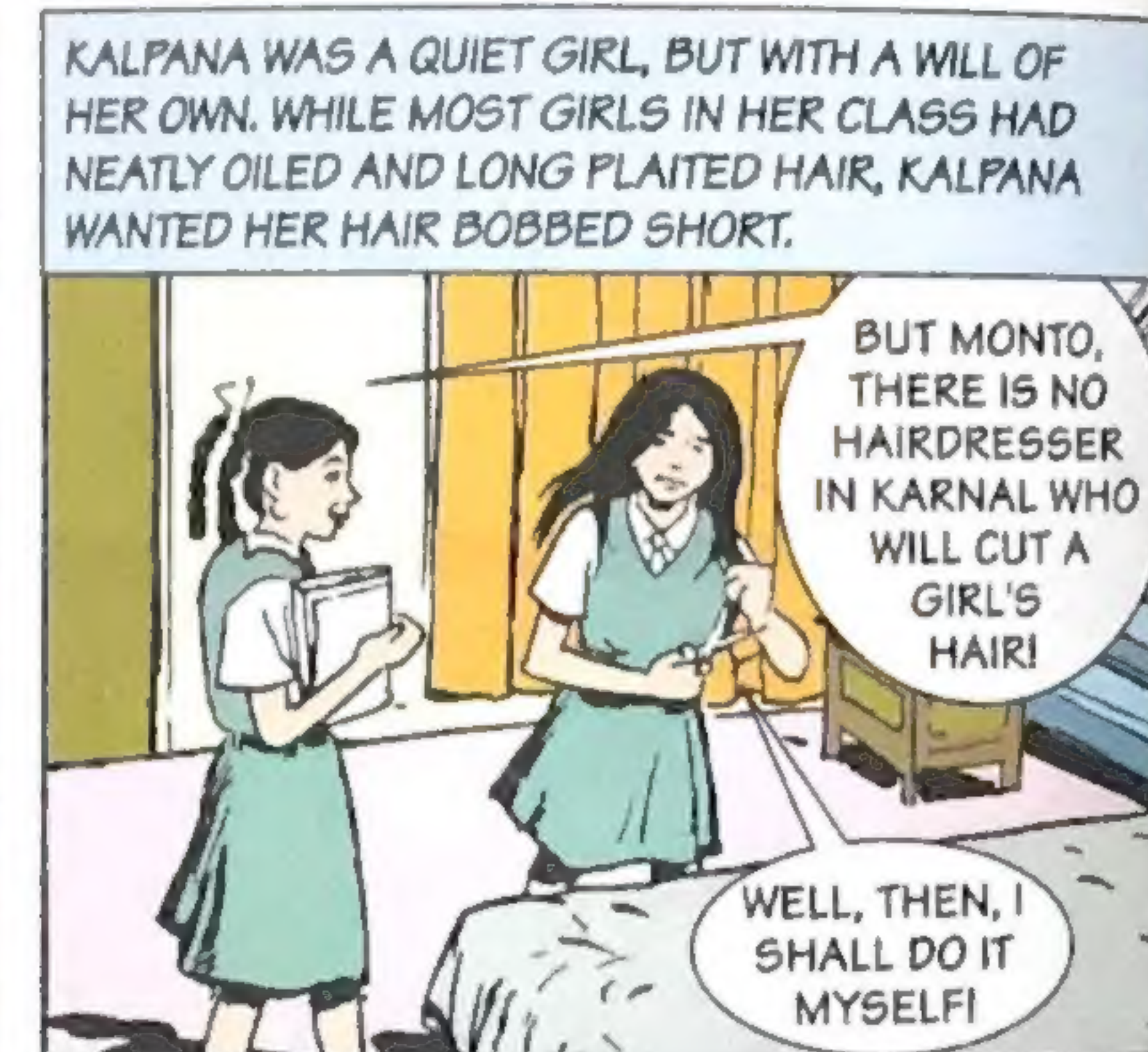
SUPER TYRES (P) LTD



MEANWHILE, KALPANA WAS ENJOYING HER STUDIES AT TAGORE BAL NIKETAN SCHOOL.

BHAAJI, LOOK WHAT I DREW IN CLASS TODAY!
A PLANE! HOW NICE, MONTO!

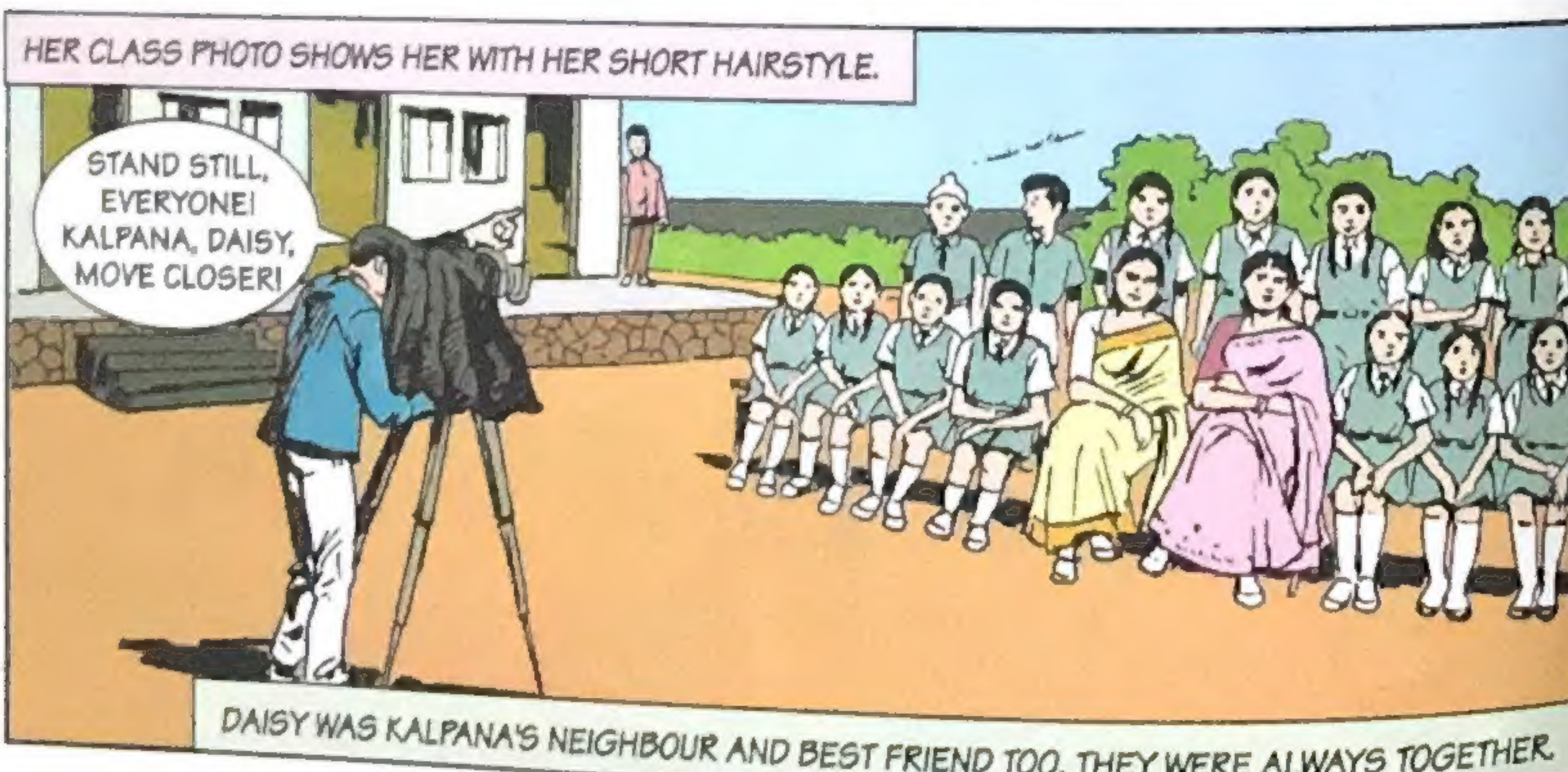
IMITATING HER UNCLES, KALPANA CALLED HER FATHER BHAAJI OR BROTHER, NOT DADDY OR PAPA.



KALPANA WAS A QUIET GIRL, BUT WITH A WILL OF HER OWN. WHILE MOST GIRLS IN HER CLASS HAD NEATLY OILED AND LONG PLAITED HAIR, KALPANA WANTED HER HAIR BOBBED SHORT.

BUT MONTO, THERE IS NO HAIRDRESSER IN KARNAL WHO WILL CUT A GIRL'S HAIR!

WELL, THEN, I SHALL DO IT MYSELF!



HER CLASS PHOTO SHOWS HER WITH HER SHORT HAIRSTYLE.

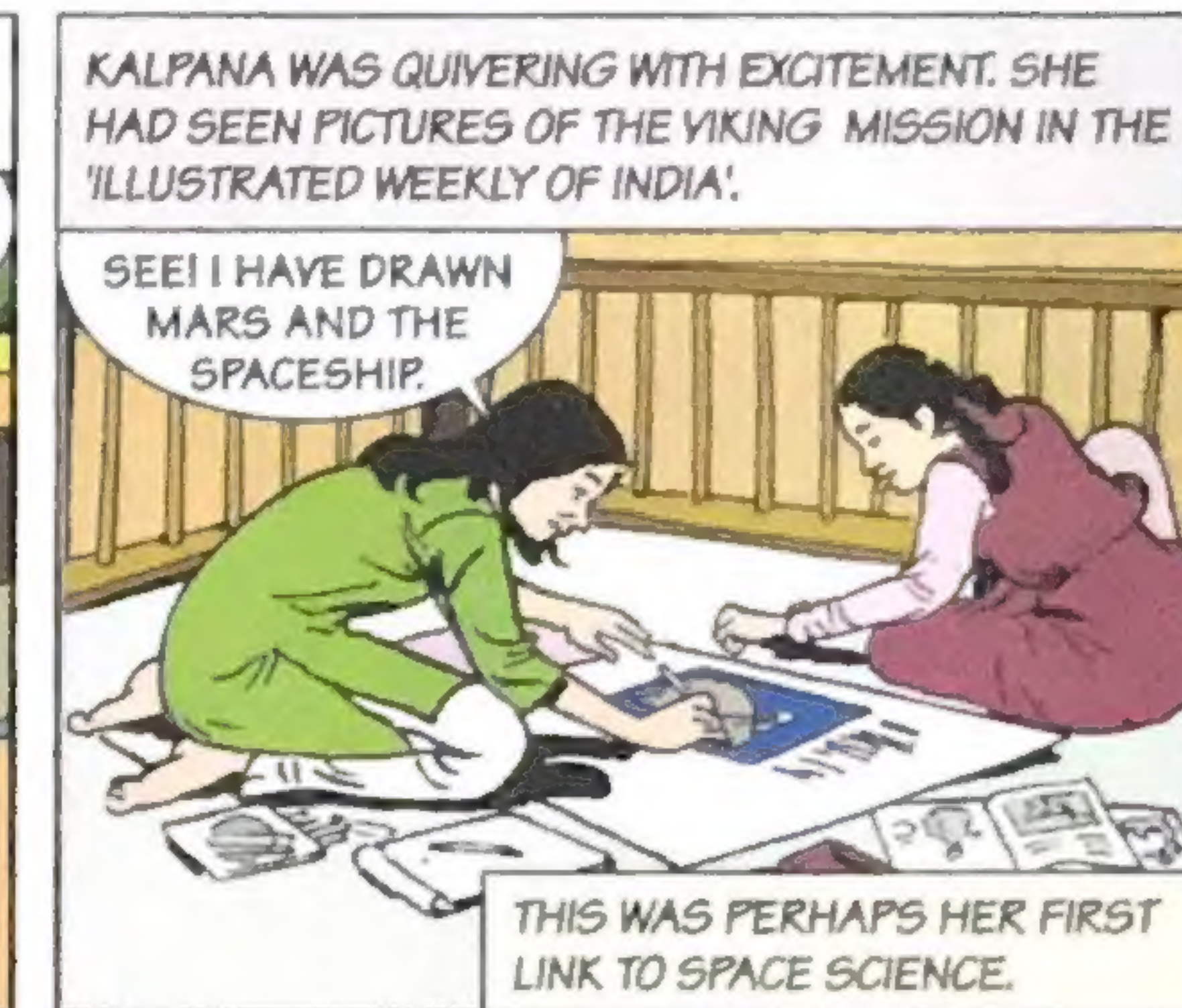
STAND STILL, EVERYONE! KALPANA, DAISY, MOVE CLOSER!

DAISY WAS KALPANA'S NEIGHBOUR AND BEST FRIEND TOO. THEY WERE ALWAYS TOGETHER.



IN THE TENTH STANDARD, THE GIRLS WERE ASSIGNED A SCIENCE PROJECT.

ISN'T IT EXCITING? WE CAN DO CHARTS AND DRAWINGS ON OUR FAVOURITE TOPIC!



KALPANA WAS QUIVERING WITH EXCITEMENT. SHE HAD SEEN PICTURES OF THE VIKING MISSION IN THE 'ILLUSTRATED WEEKLY OF INDIA'.

SEE! I HAVE DRAWN MARS AND THE SPACESHIP.

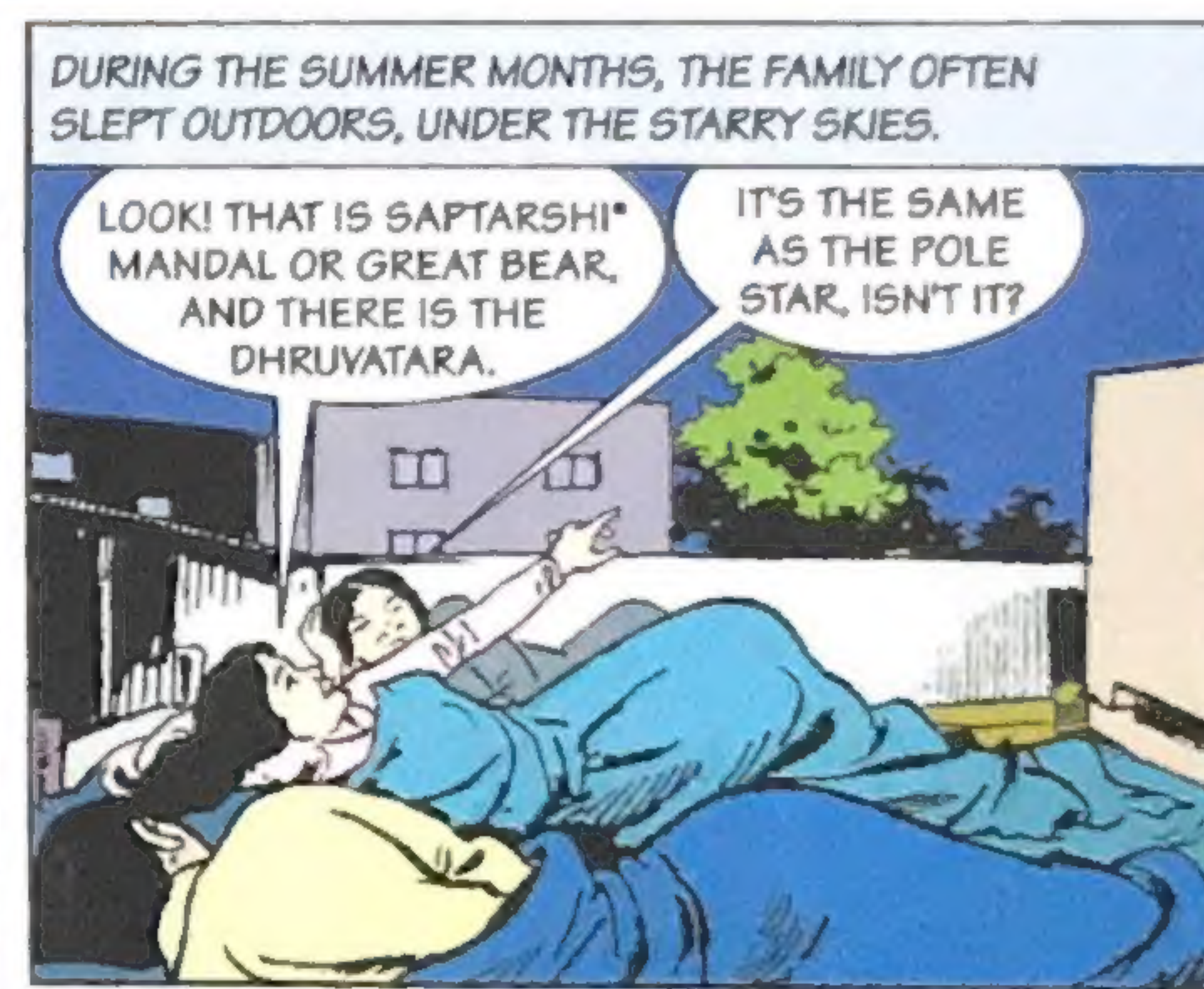
THIS WAS PERHAPS HER FIRST LINK TO SPACE SCIENCE.



KALPANA'S COLOURFUL CHART DEPICTING SPACE WAS QUITE IMPRESSIVE AND SO WAS HER PAPER ON THE VIKING MISSION.

THAT IS INDEED A FINE JOB, KALPANA.
I WANT TO STUDY AEROSPACE ENGINEERING, DIDI.

IN TAGORE BAL NIKETAN, STUDENTS CALLED THEIR TEACHERS 'DIDI' OR 'OLDER SISTER' UNLIKE THE USUAL FORM OF ADDRESS 'MISS' OR 'MADAM' IN MOST URBAN SCHOOLS.



DURING THE SUMMER MONTHS, THE FAMILY OFTEN SLEPT OUTDOORS, UNDER THE STARRY SKIES.

LOOK! THAT IS SAPTARSHI* MANDAL OR GREAT BEAR, AND THERE IS THE DHRYVATARA.
IT'S THE SAME AS THE POLE STAR, ISN'T IT?



HER BROTHER SANJAY WAS A GOOD FRIEND AND LISTENER.

DO YOU KNOW HOW TO DIFFERENTIATE STARS FROM PLANETS? STARS, TWINKLE, PLANETS DON'T.

I FIND PLANETS VERY EXCITING!



SHALL I TELL YOU A SECRET? I LOVE TO IMAGINE GOING UP TO MARS, WITH OUR OWN LITTLE SPACESHIPS! WHAT FUN IT WOULD BE!

YES, DON'T WE ALL KNOW HOW EXCITED YOU WERE ABOUT THE VIKING CHART YOU MADE!

*SAPTA RISHI OR 'SEVEN SAGES', THE INDIAN NAME FOR THE GREAT BEAR CONSTELLATION

SANJAY AND KALPANA OFTEN CYCLED PAST THE FLYING CLUB OF KARNAL, ONE OF THE TWELVE IN THE COUNTRY.

HOW GREAT THOSE LITTLE PLANES LOOK! LIKE LITTLE RED AND YELLOW BIRDS.

THEY ARE TRAINER AIRCRAFTS. MAYBE WE CAN GET A RIDE ON THEM.

HARYANA INSTITUTE CIVIL AVIATION

IT WAS ONE OF THE MOST EXCITING MOMENTS IN YOUNG KALPANA'S LIFE WHEN SHE FOUND HERSELF UP IN THE SKY ON A GLIDER RIDE ARRANGED BY HER FATHER.

THIS IS AMAZING! UNBELIEVABLE!

KALPANA WAS A BUNDLE OF EXCITEMENT, EAGER TO SHARE HER BOUNDLESS JOY.

OHI DIDII I HAD THE GREATEST ADVENTURE! I FLEW ON A PLANE! HIGH UP IN THE SKY.

AHH! GOOD FOR YOU! NOW, CAN WE COME BACK TO EARTH AND STUDY SOME GEOGRAPHY.

KALPANA PARTICIPATED IN ALL THE ACTIVITIES THAT THE SCHOOL ORGANISED TO ENSURE AN ALL-ROUND DEVELOPMENT OF THE STUDENTS. SHE WROTE POETRY.

SHE TOOK PART IN SCHOOL DANCES.

ANNUAL DAY

IN SPORTS, SHE WAS VERY FAST ON HER FEET.

IN THE 100-METRE SPRINT, THE FIRST PRIZE GOES TO KALPANA CHAWLA

SHE LOVED PLAYING ENERGETIC OUTDOOR GAMES, LIKE VOLLEYBALL.

HEY CATCH IT, BUTTER FINGERS!

SHE WAS QUITE INTERESTED IN THE LATEST FASHIONS. A FAREWELL FUNCTION WAS ARRANGED FOR THE STUDENTS PASSING OUT FROM SCHOOL -

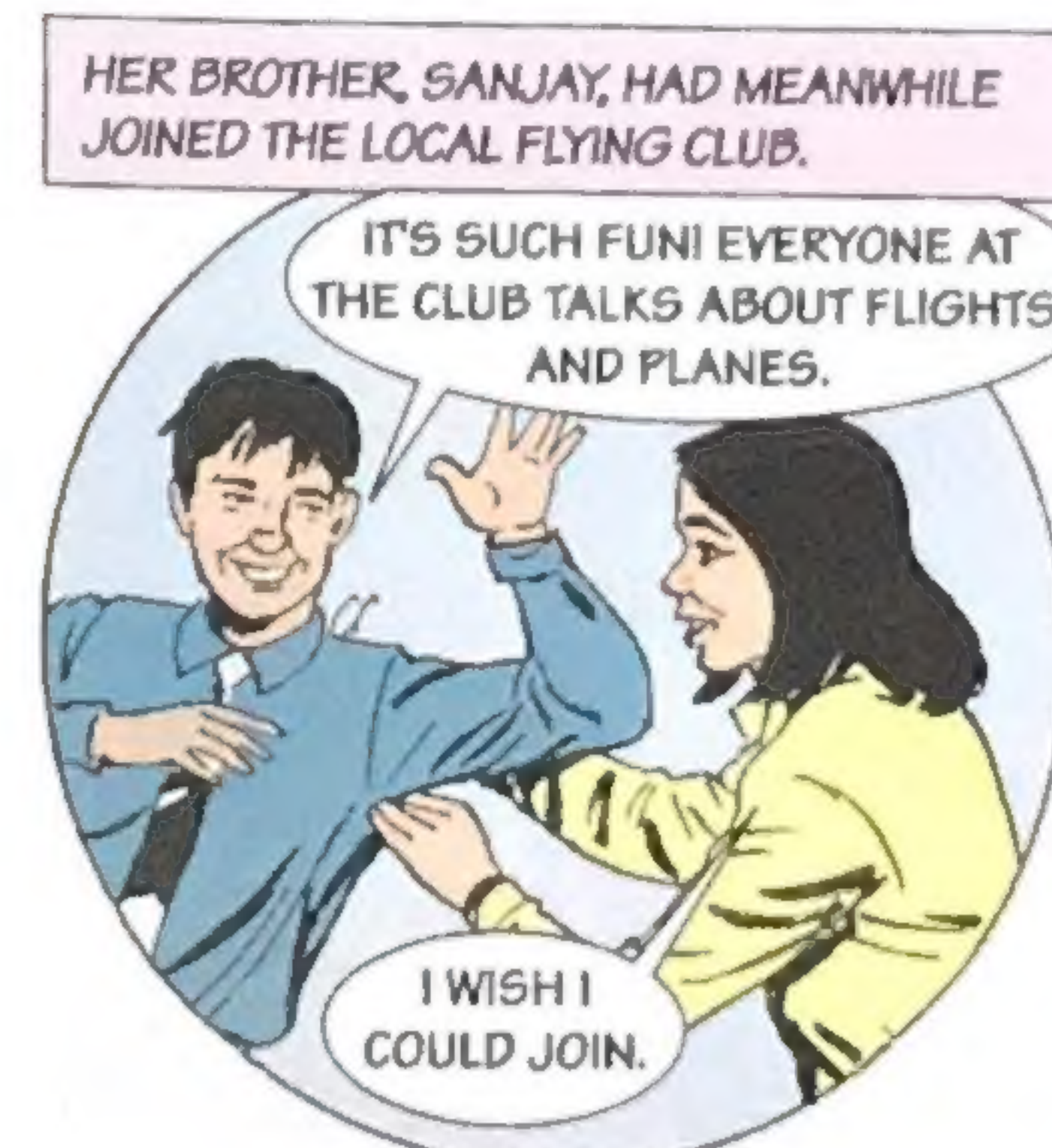
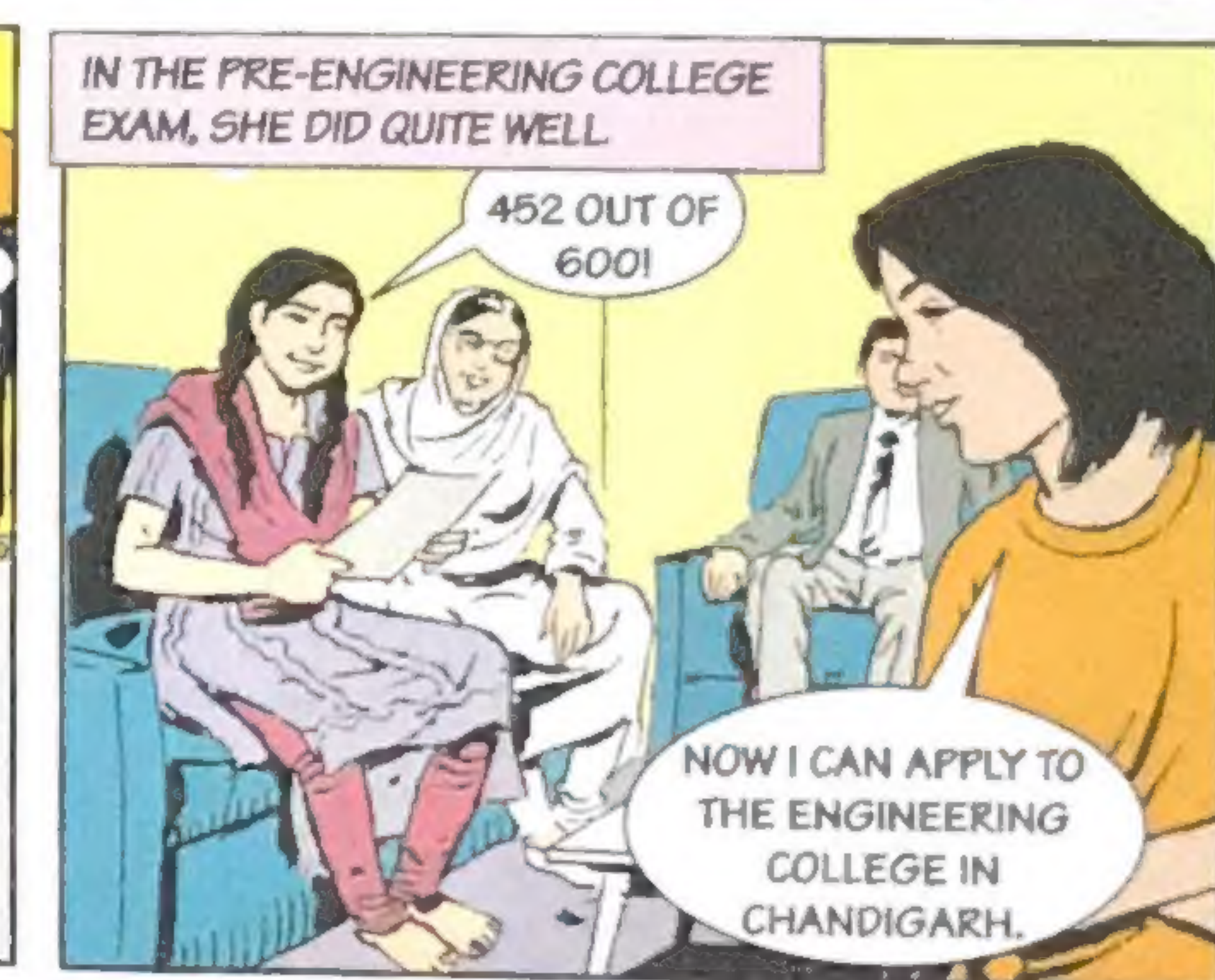
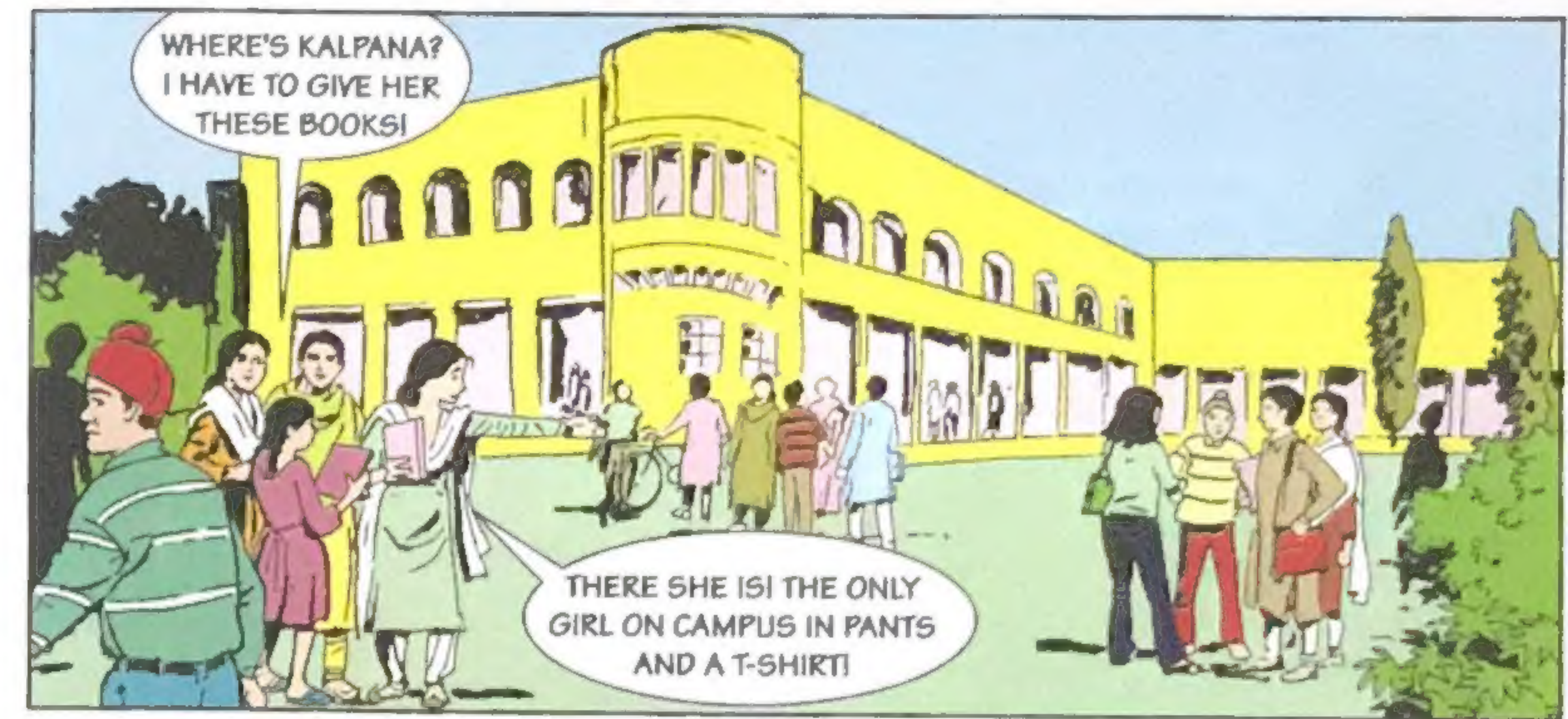
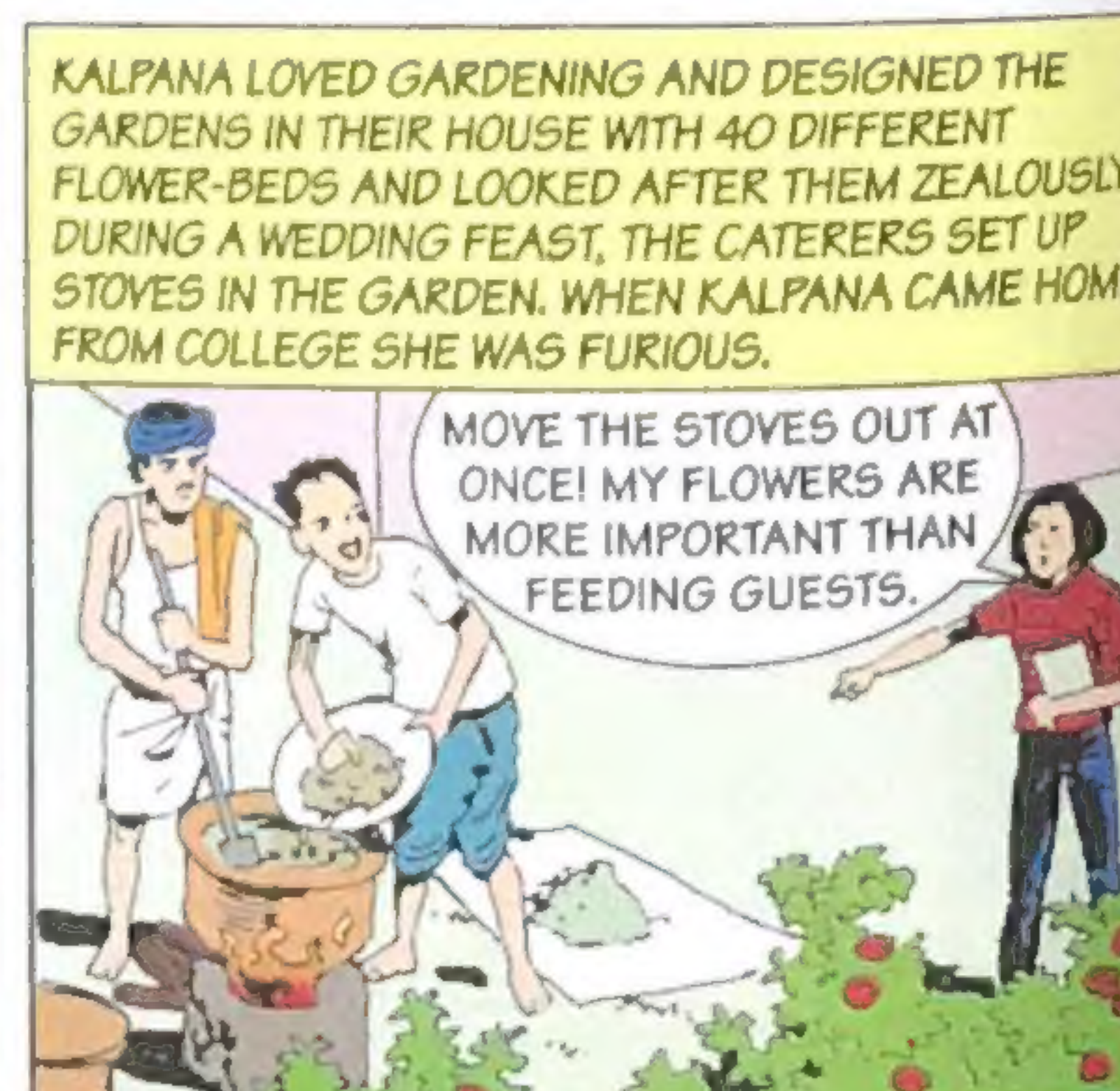
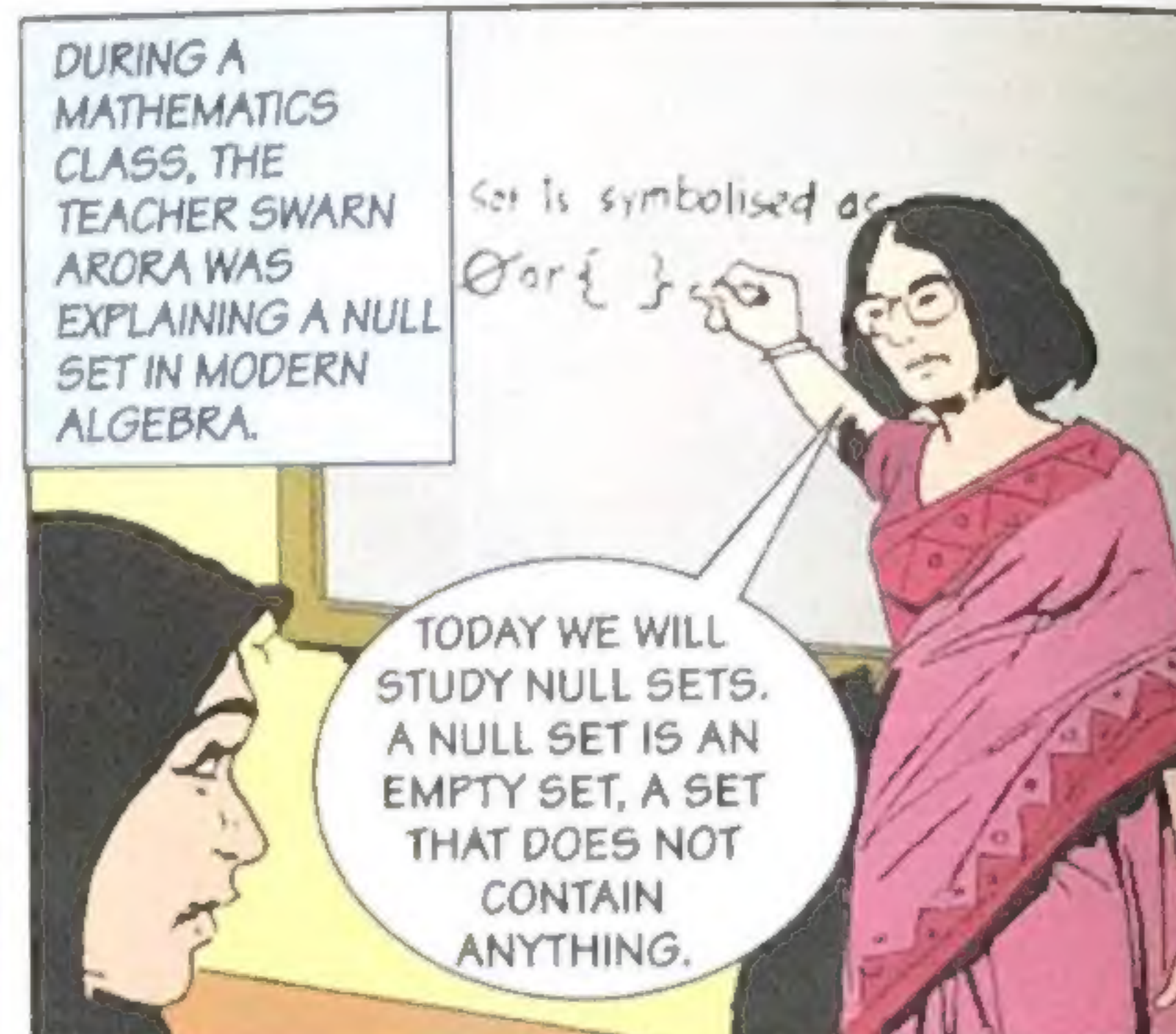
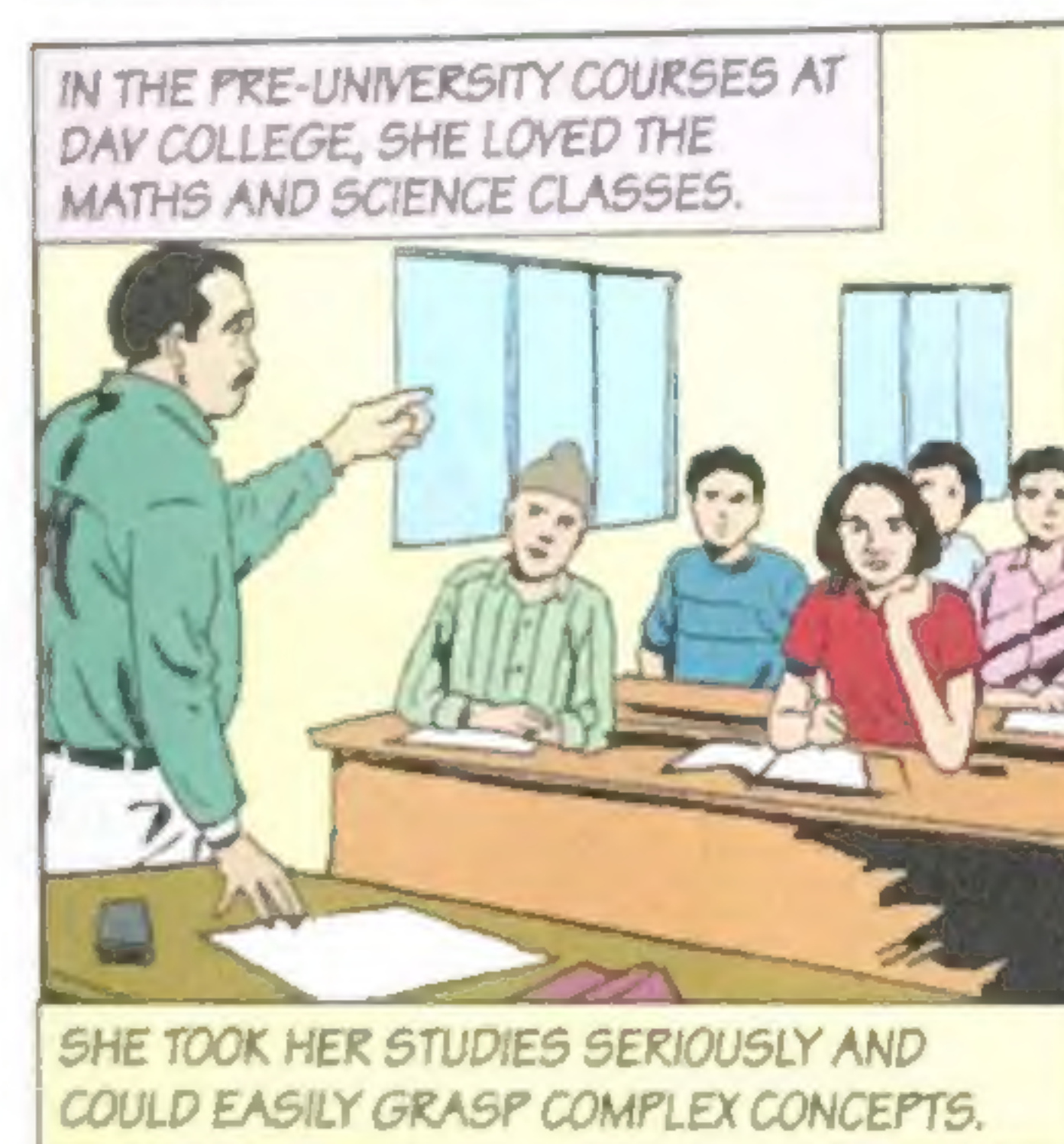
YET SHE COULD BE QUITE CASUAL ABOUT HER APPEARANCE TOO. AT SUNITA'S WEDDING -

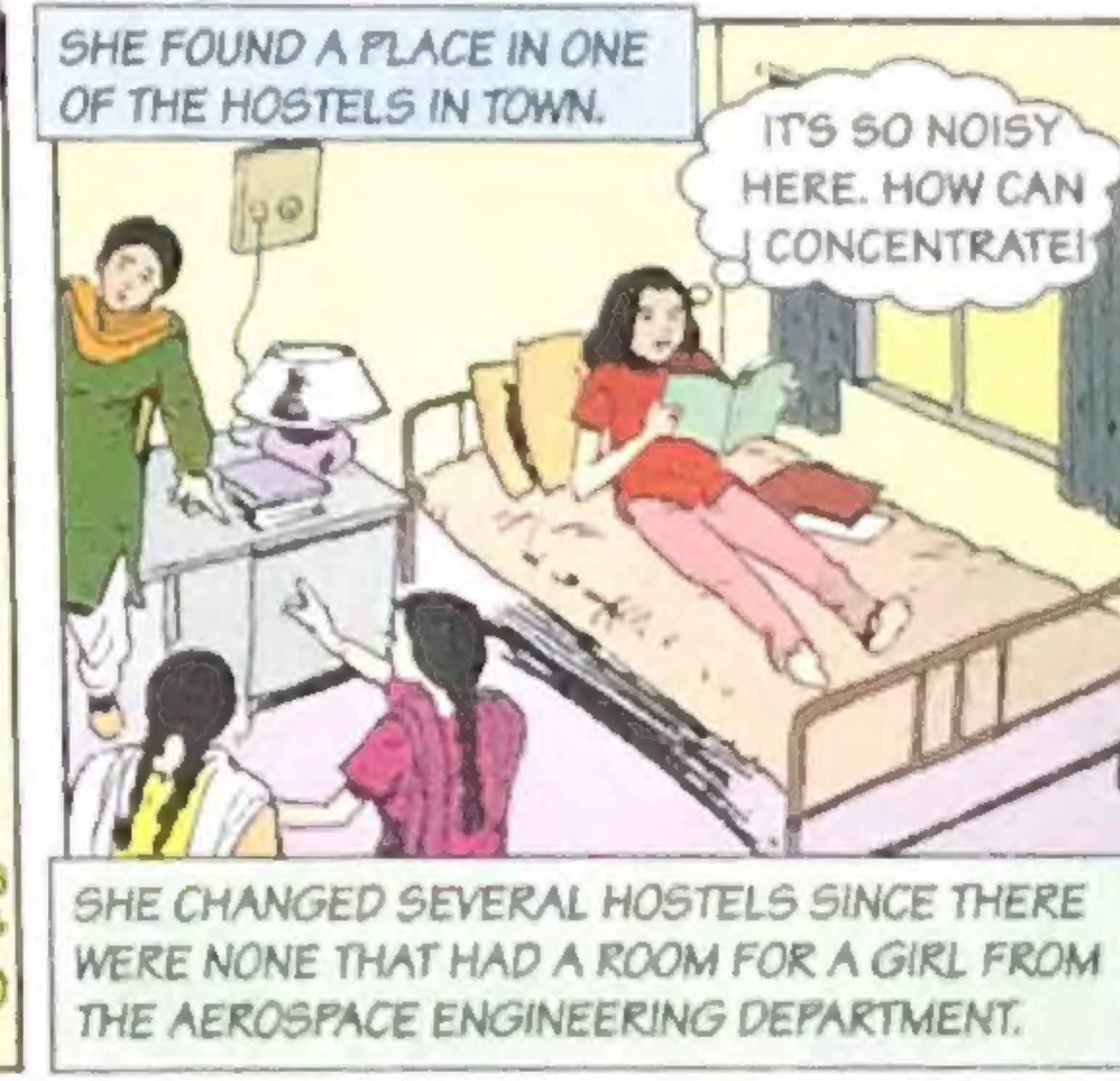
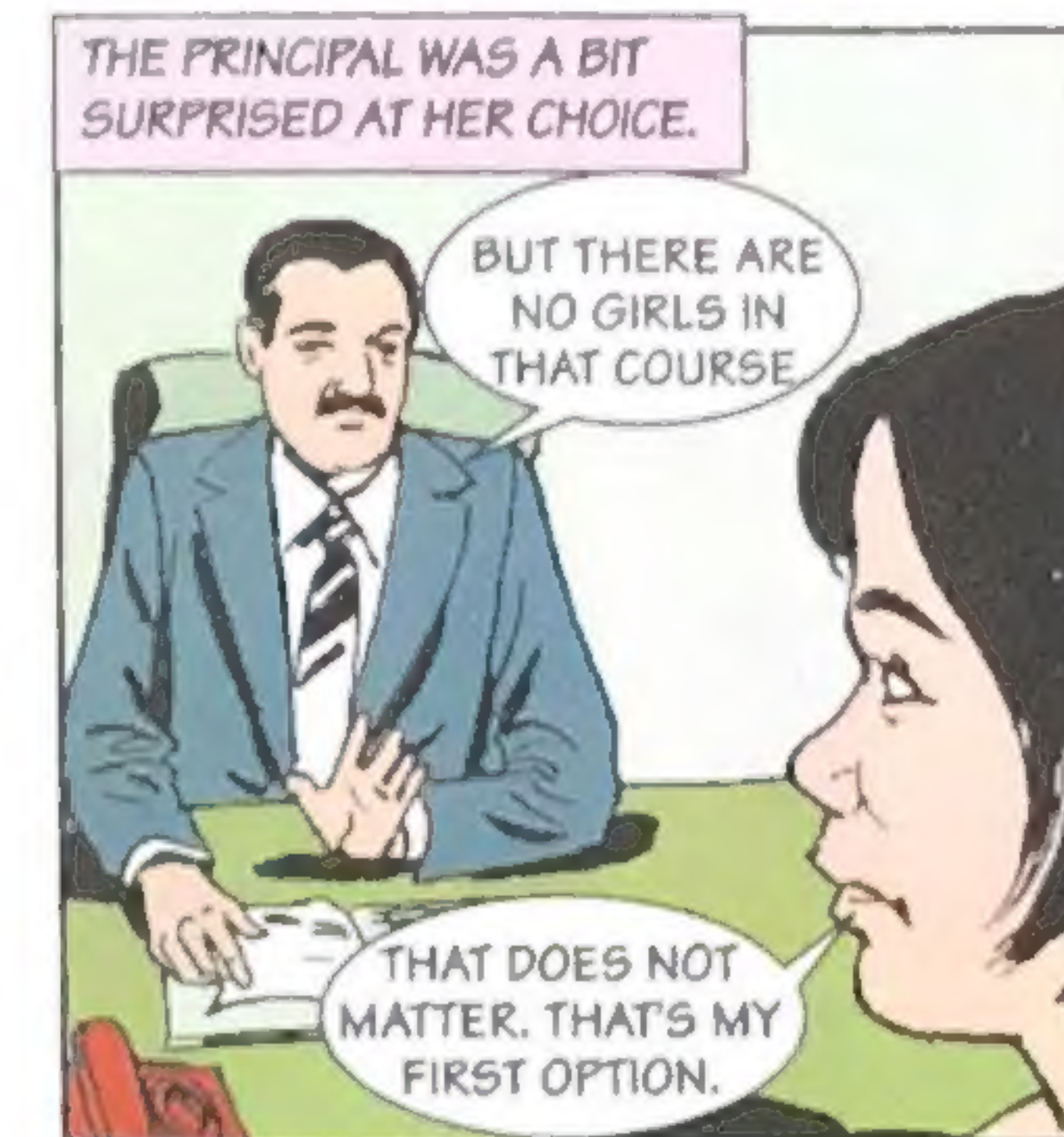
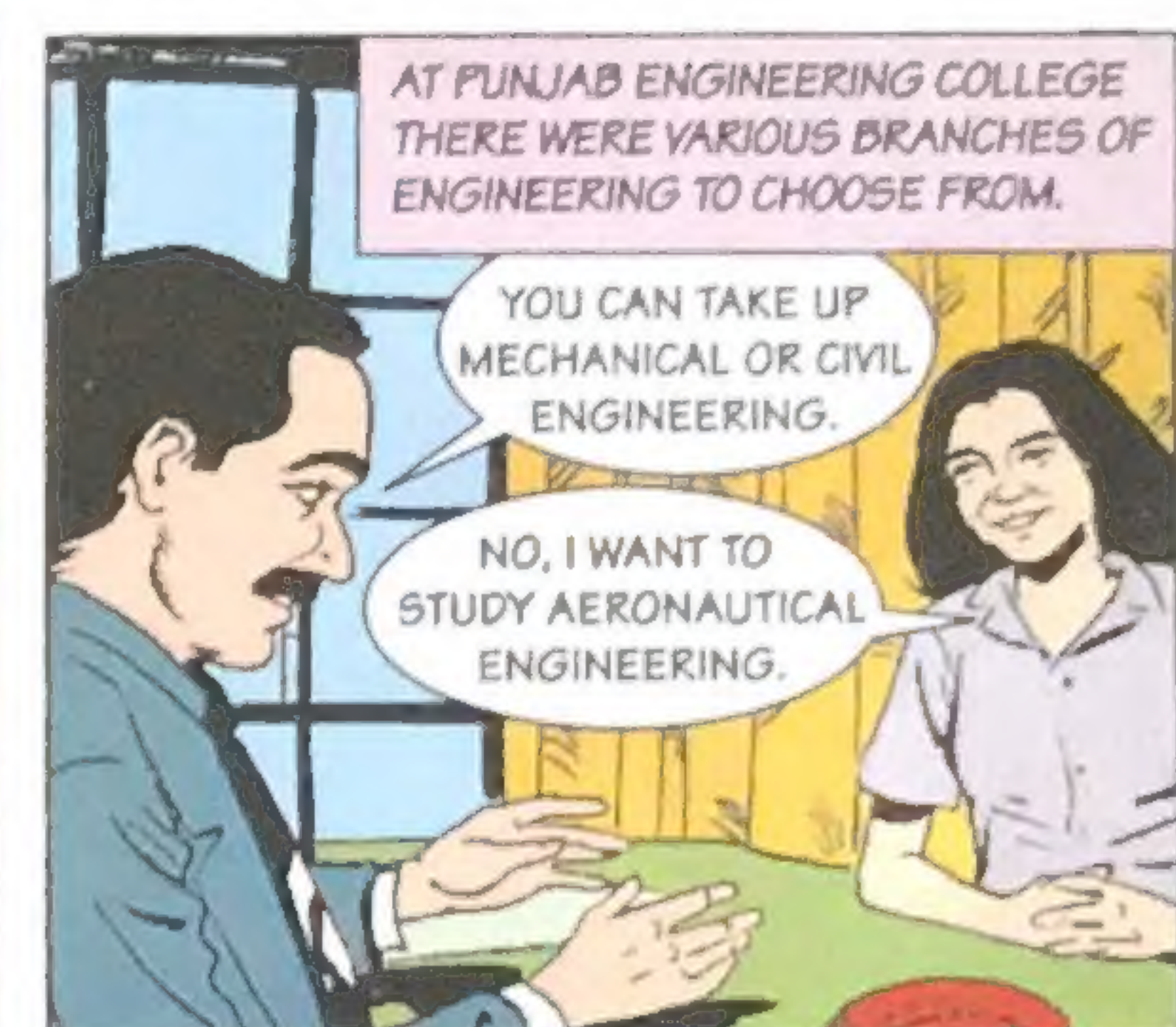
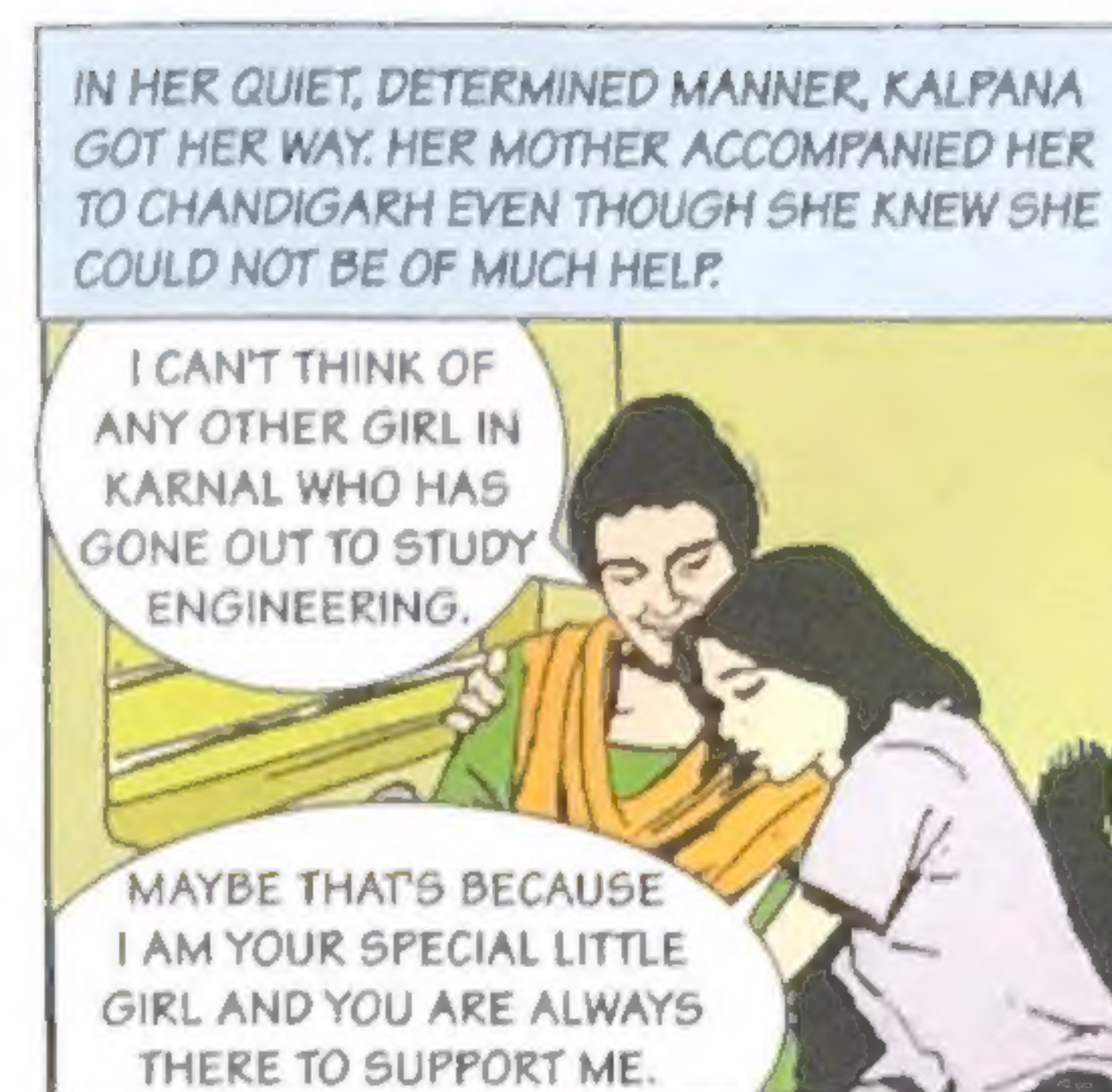
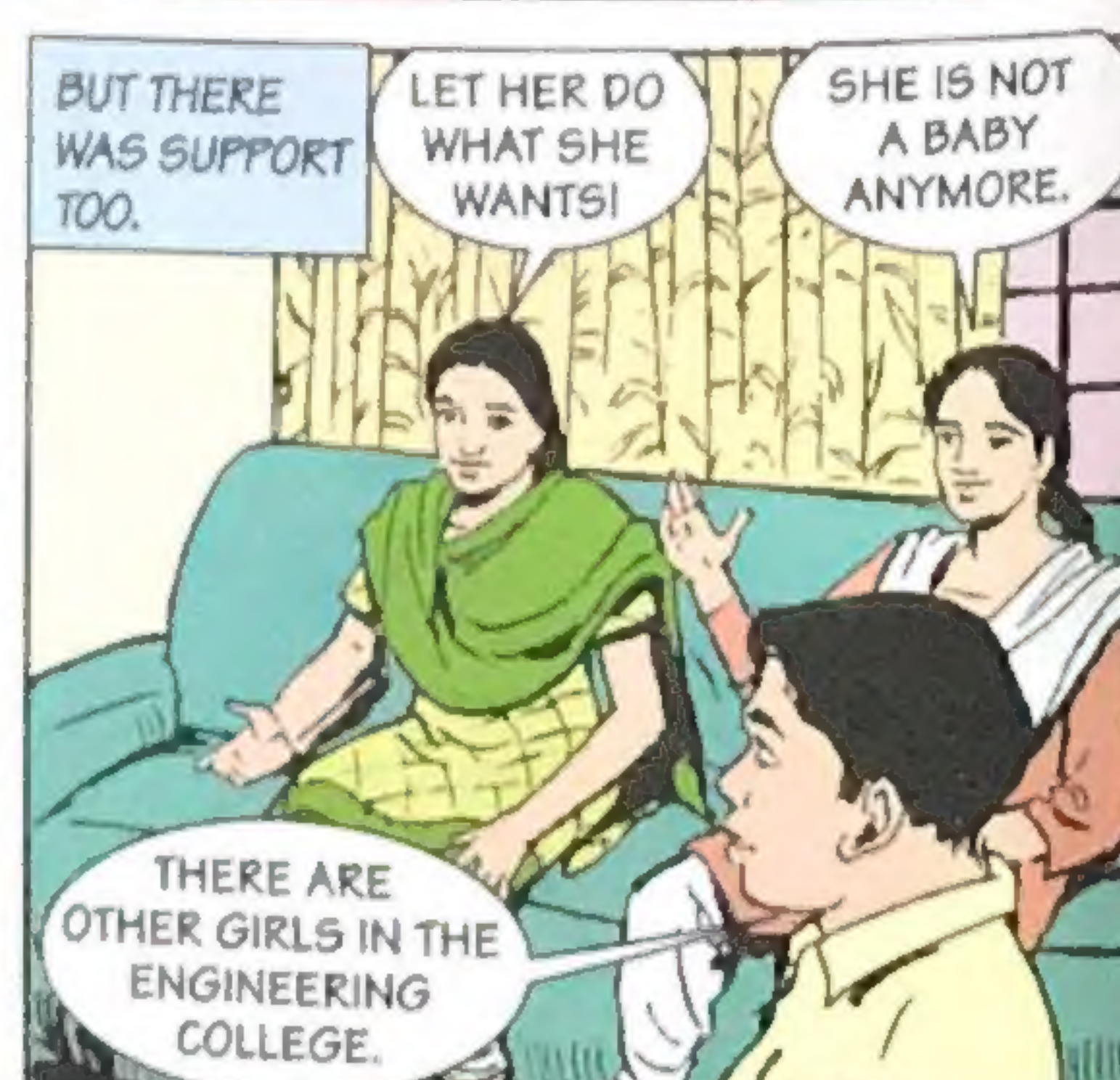
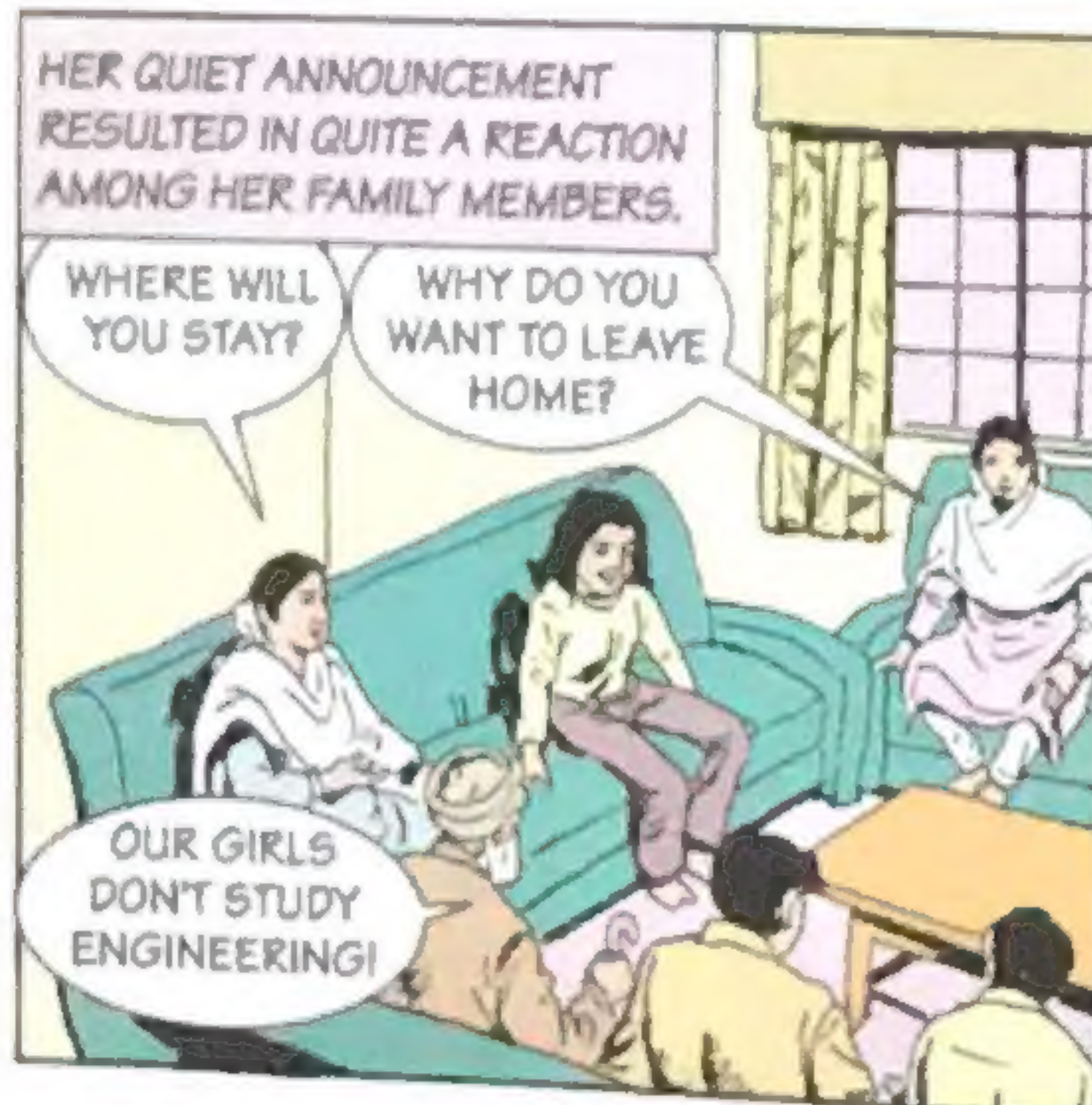
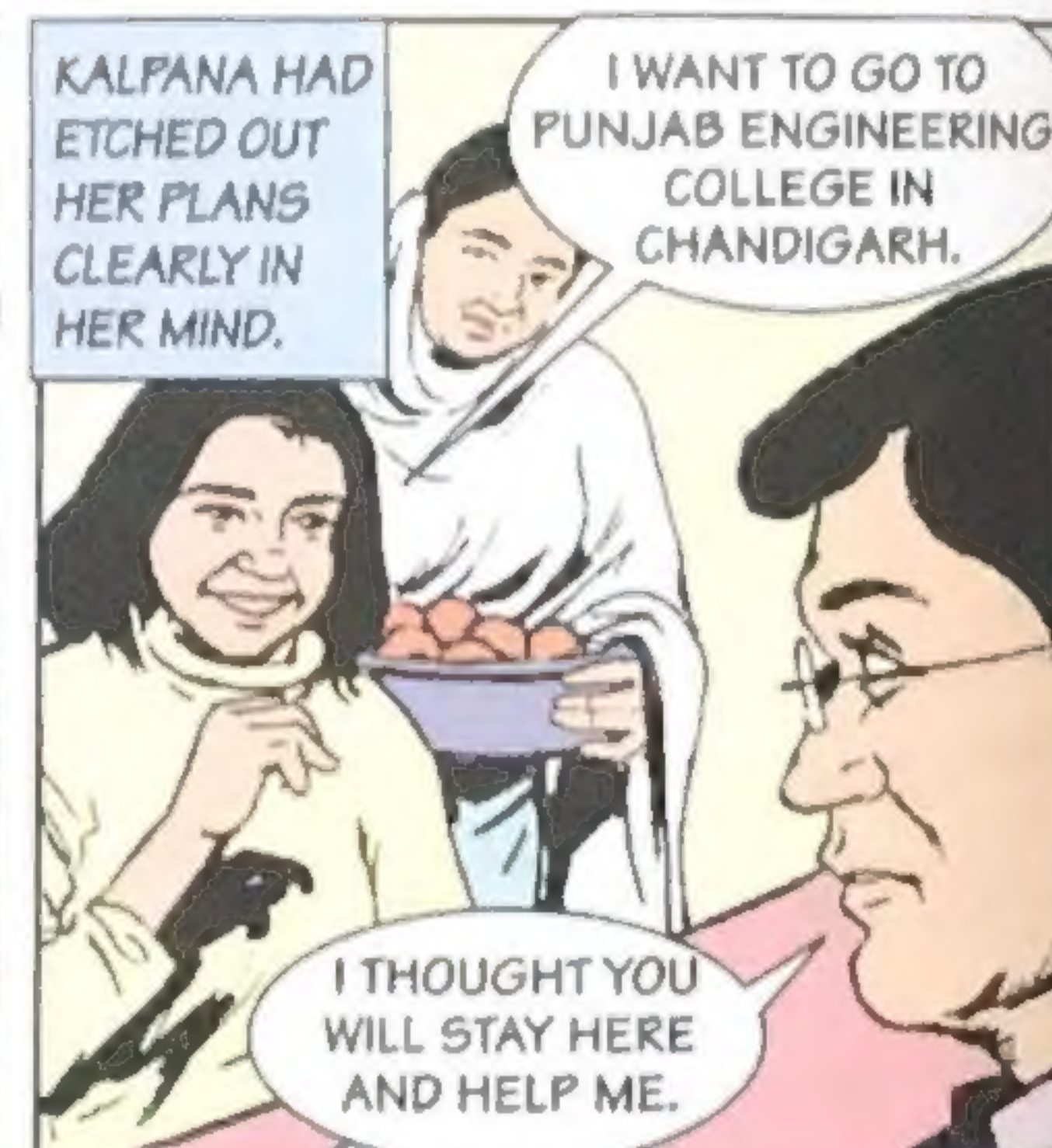
KALPANA! YOU'VE BEEN WEARING THE SAME DRESS FOR THREE DAYS!

HEY, KALPANA! WHAT ARE YOU WEARING?

THEY ARE CALLED BELL-BOTTOM PANTS! AREN'T THEY SMART?

SO? I DON'T CARE! WHY SHOULD ANYONE ELSE?

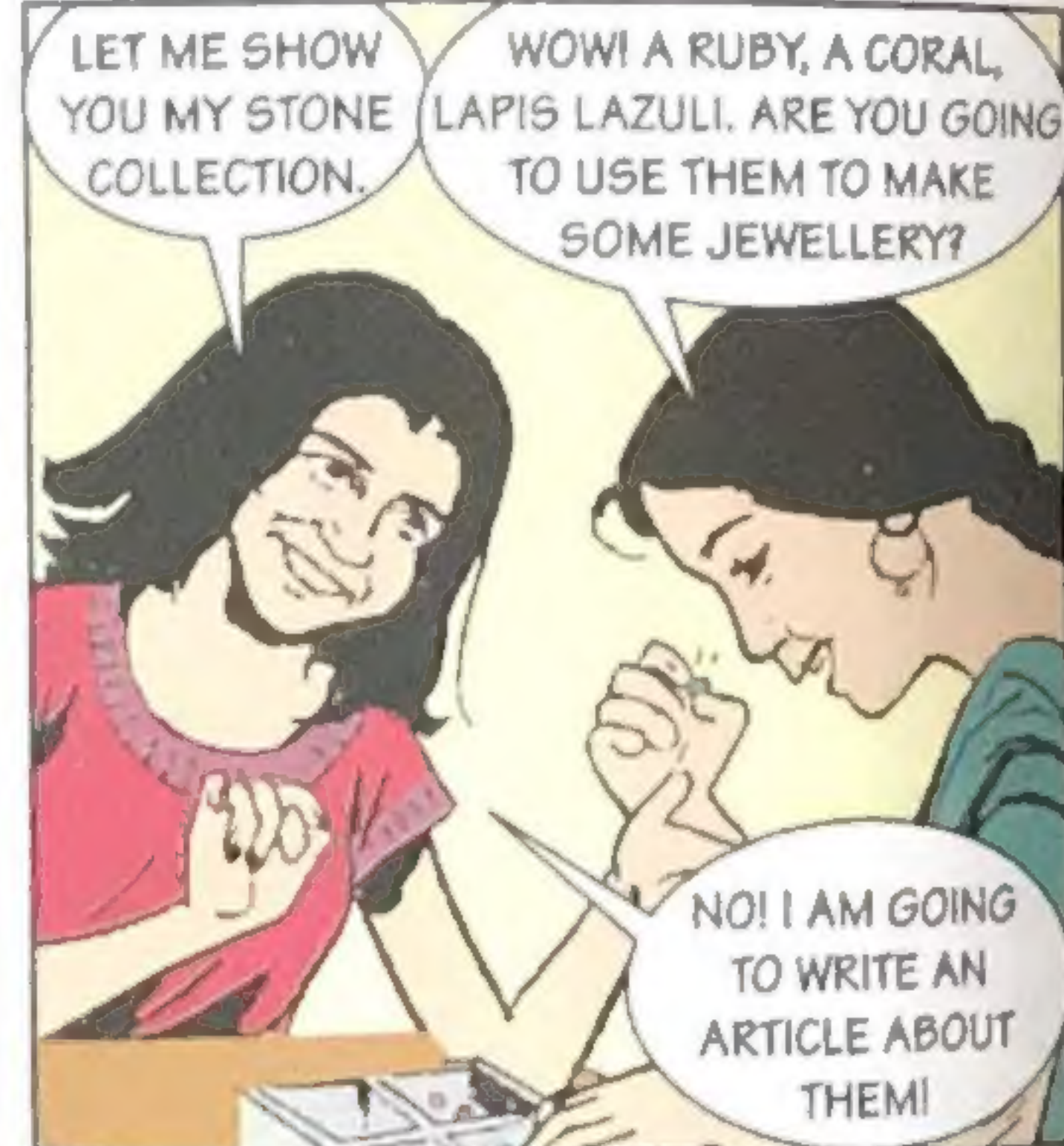
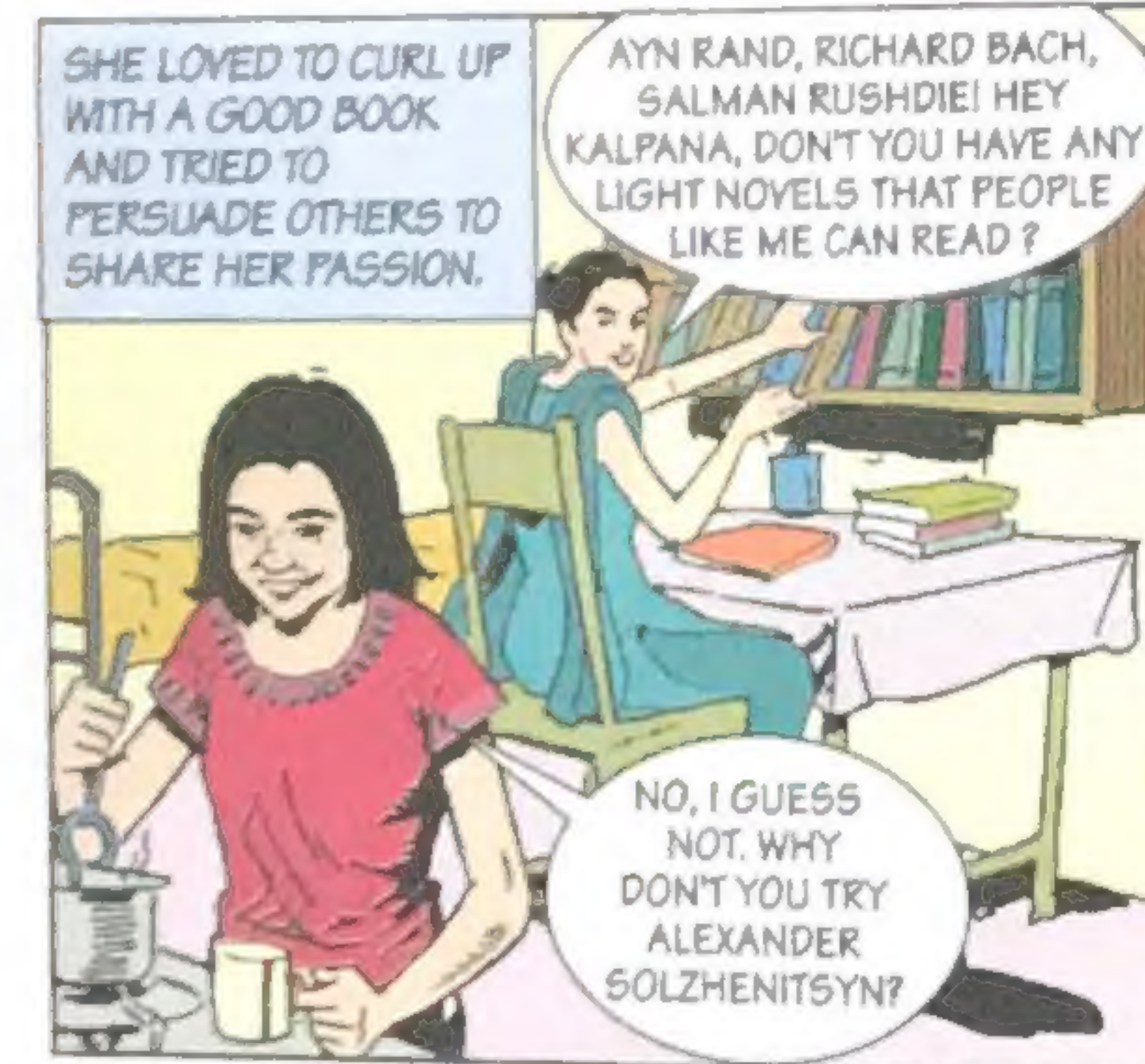
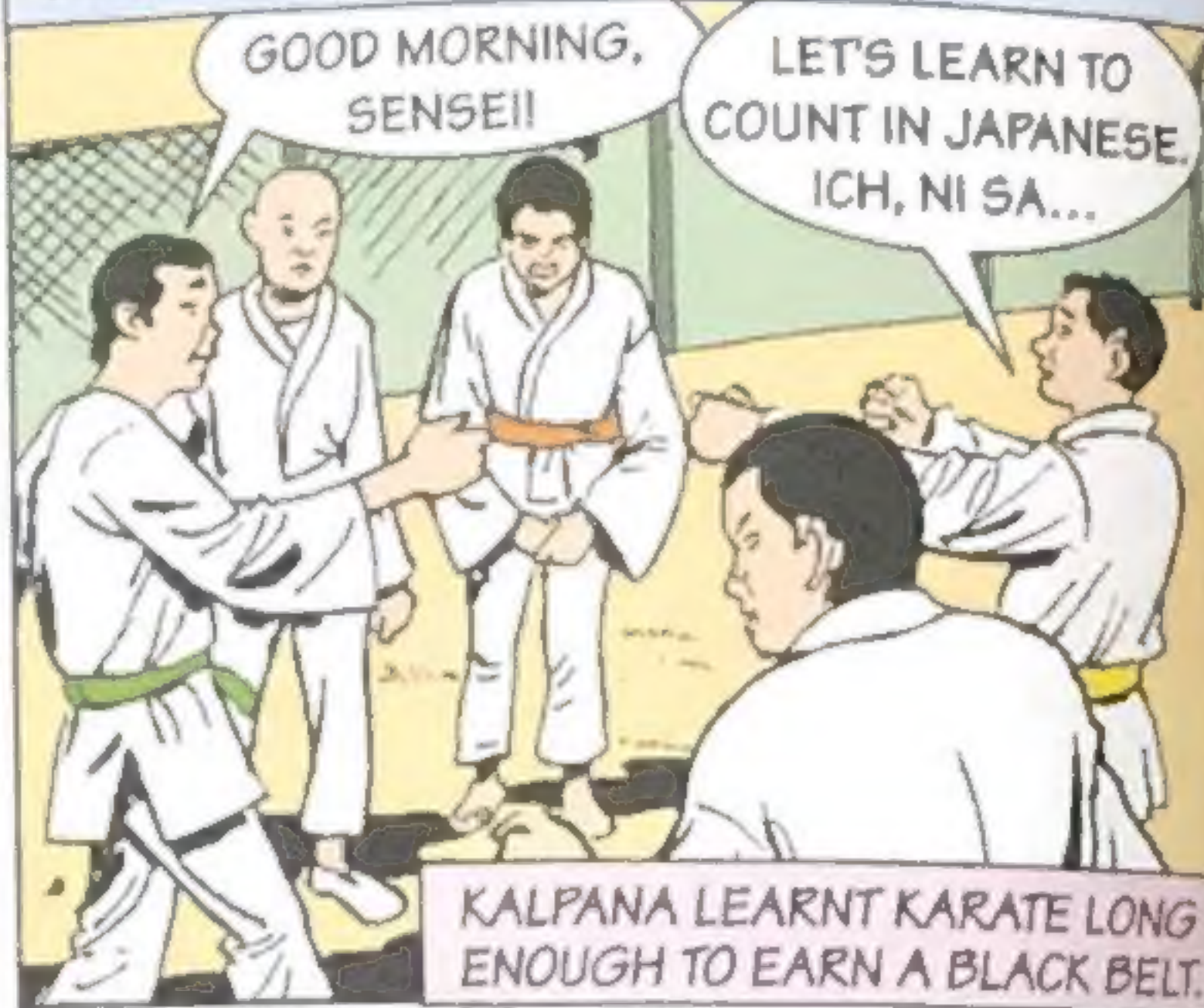




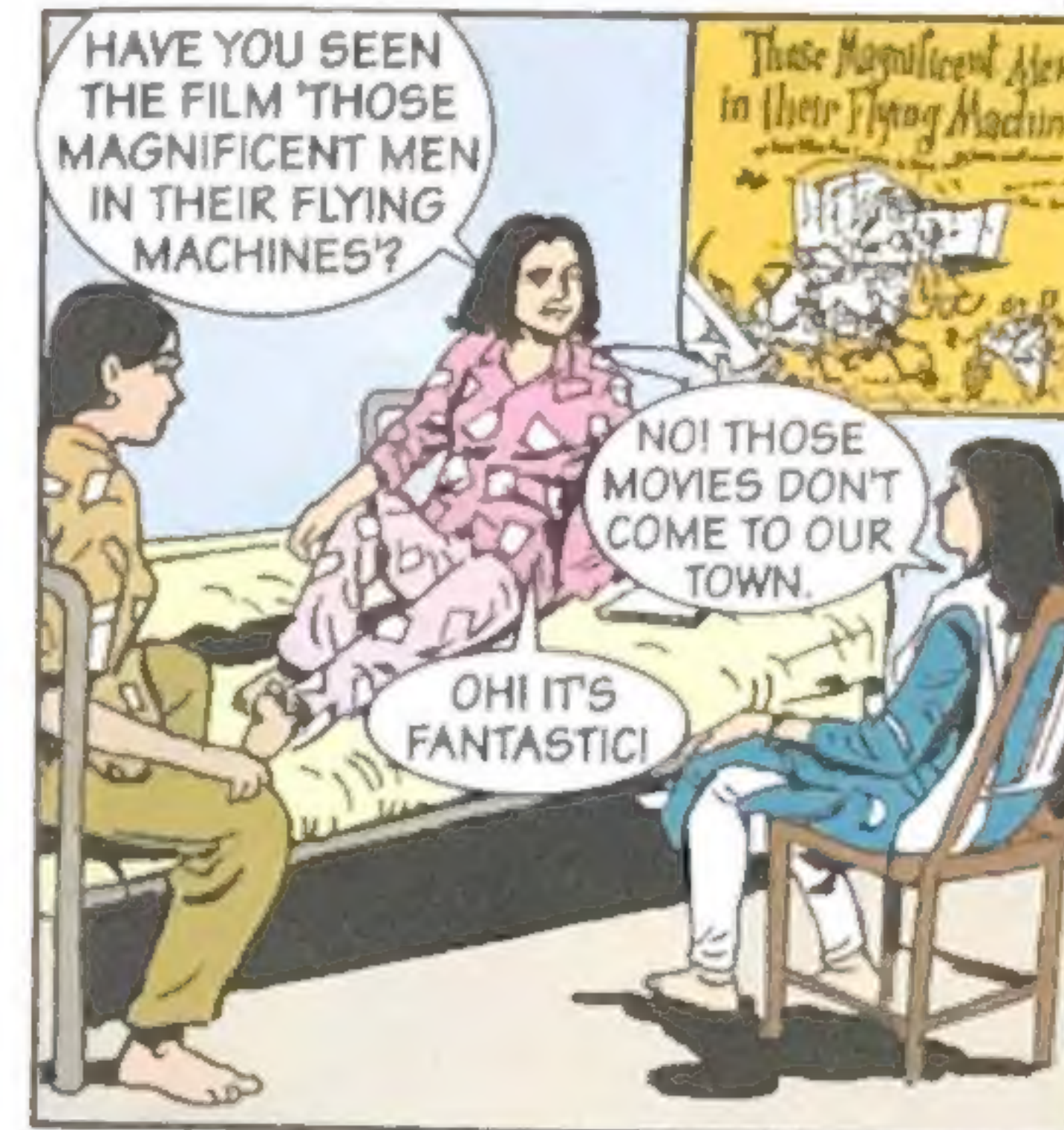
IN THE END SHE FOUND A ROOM OVER A GARAGE.



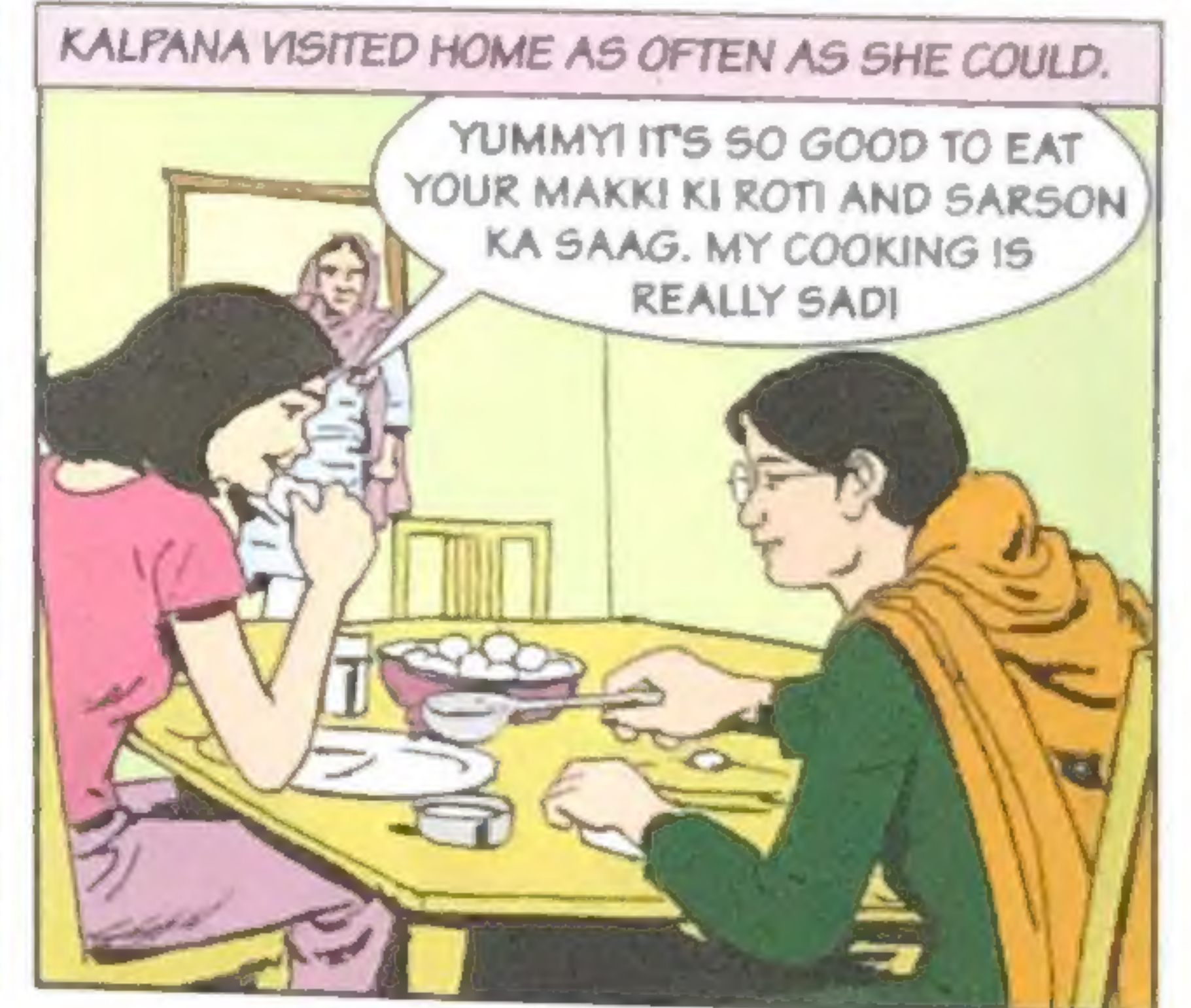
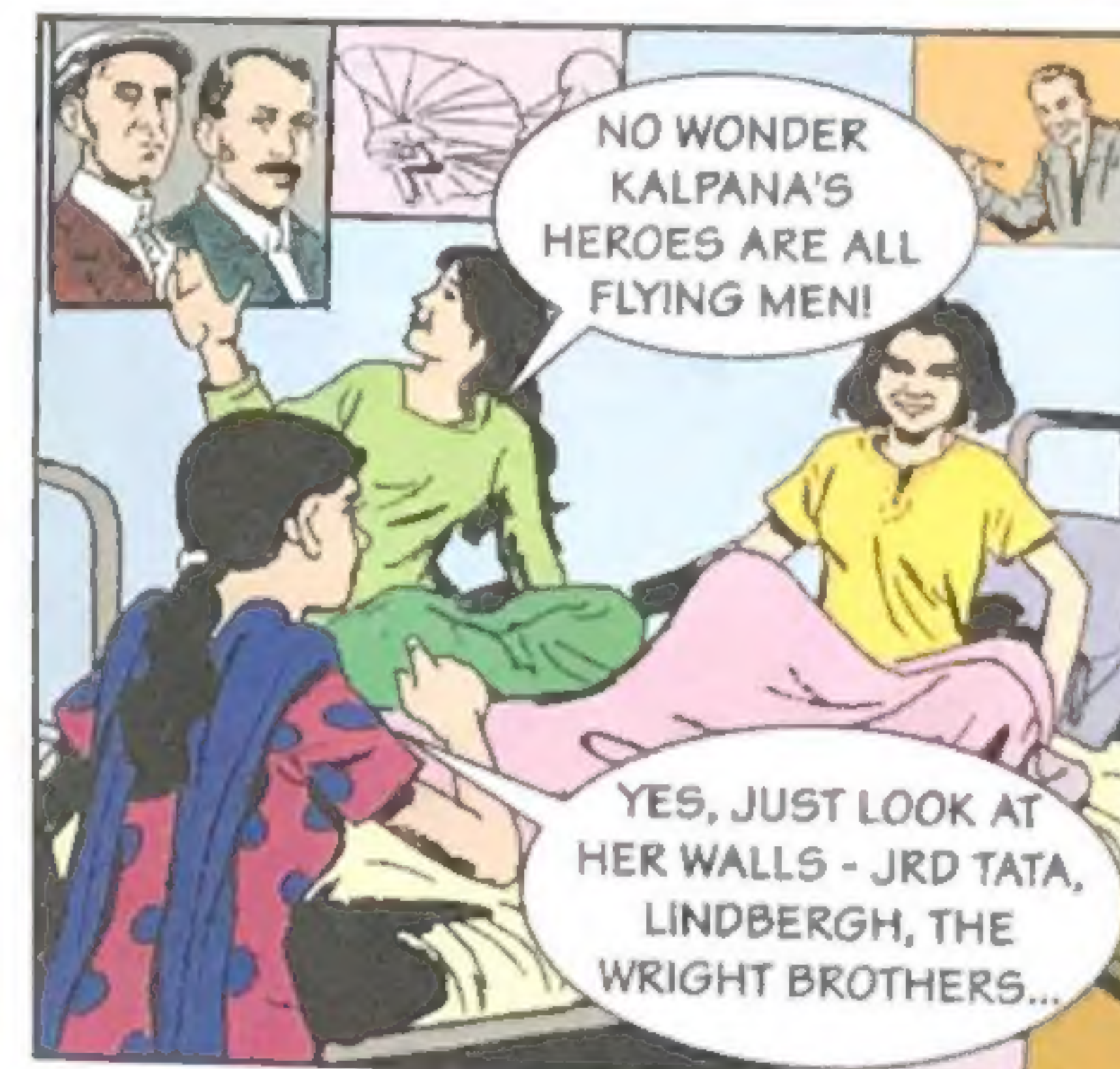
BESIDES STUDIES, SHE FOUND TIME FOR MANY OTHER THINGS LIKE LEARNING KARATE.



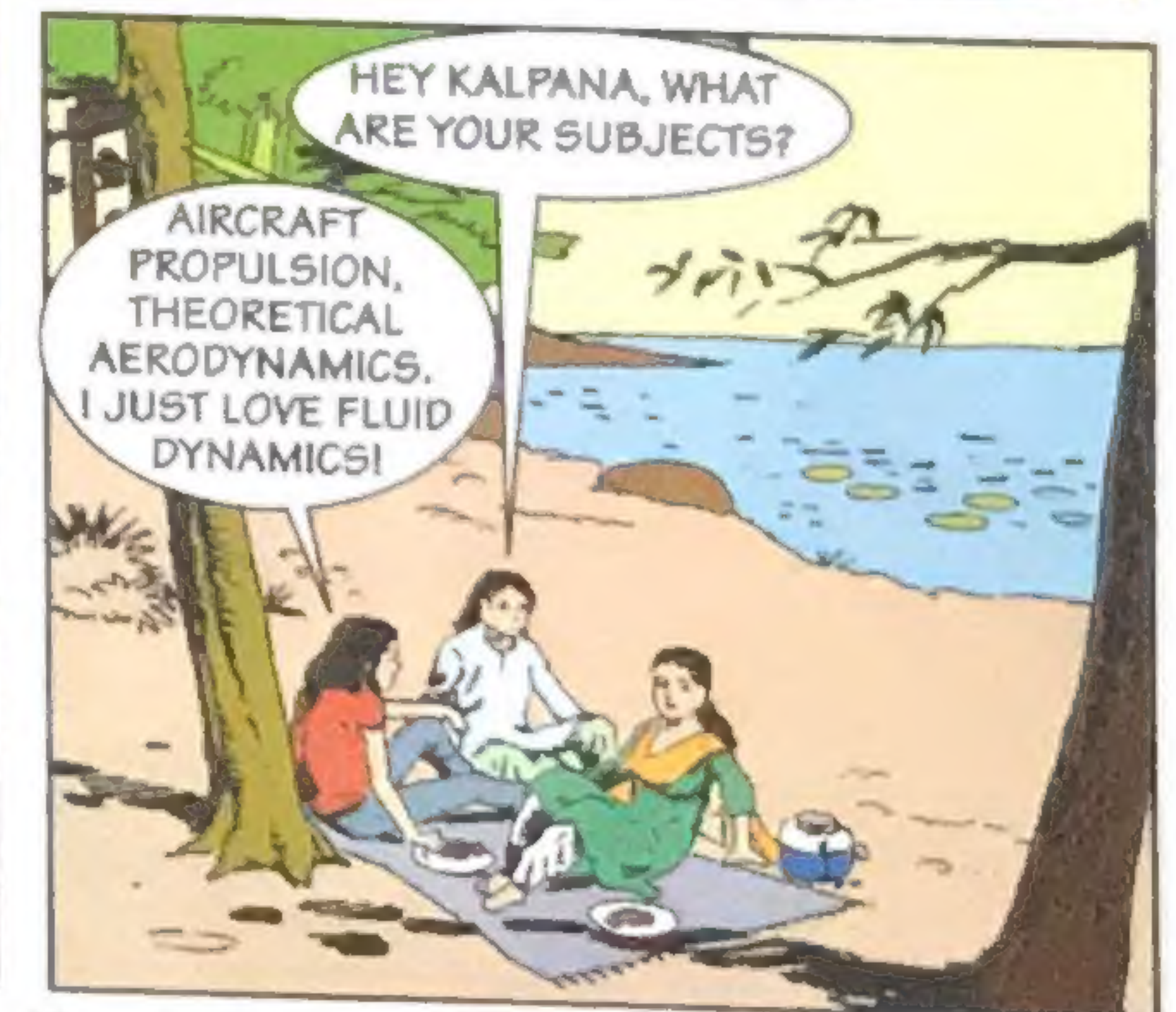
KALPANA WAS FASCINATED BY MANY SUBJECTS.

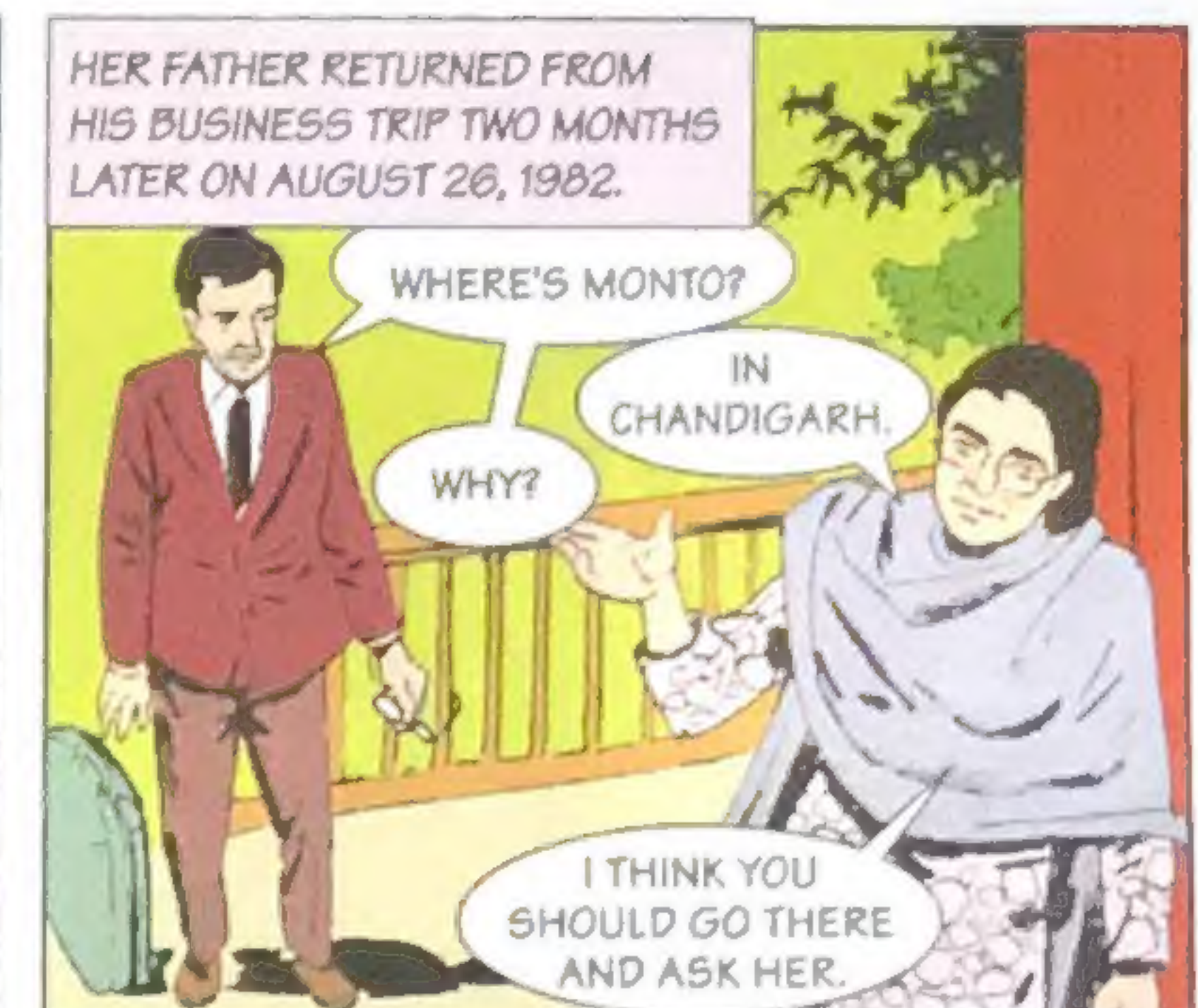
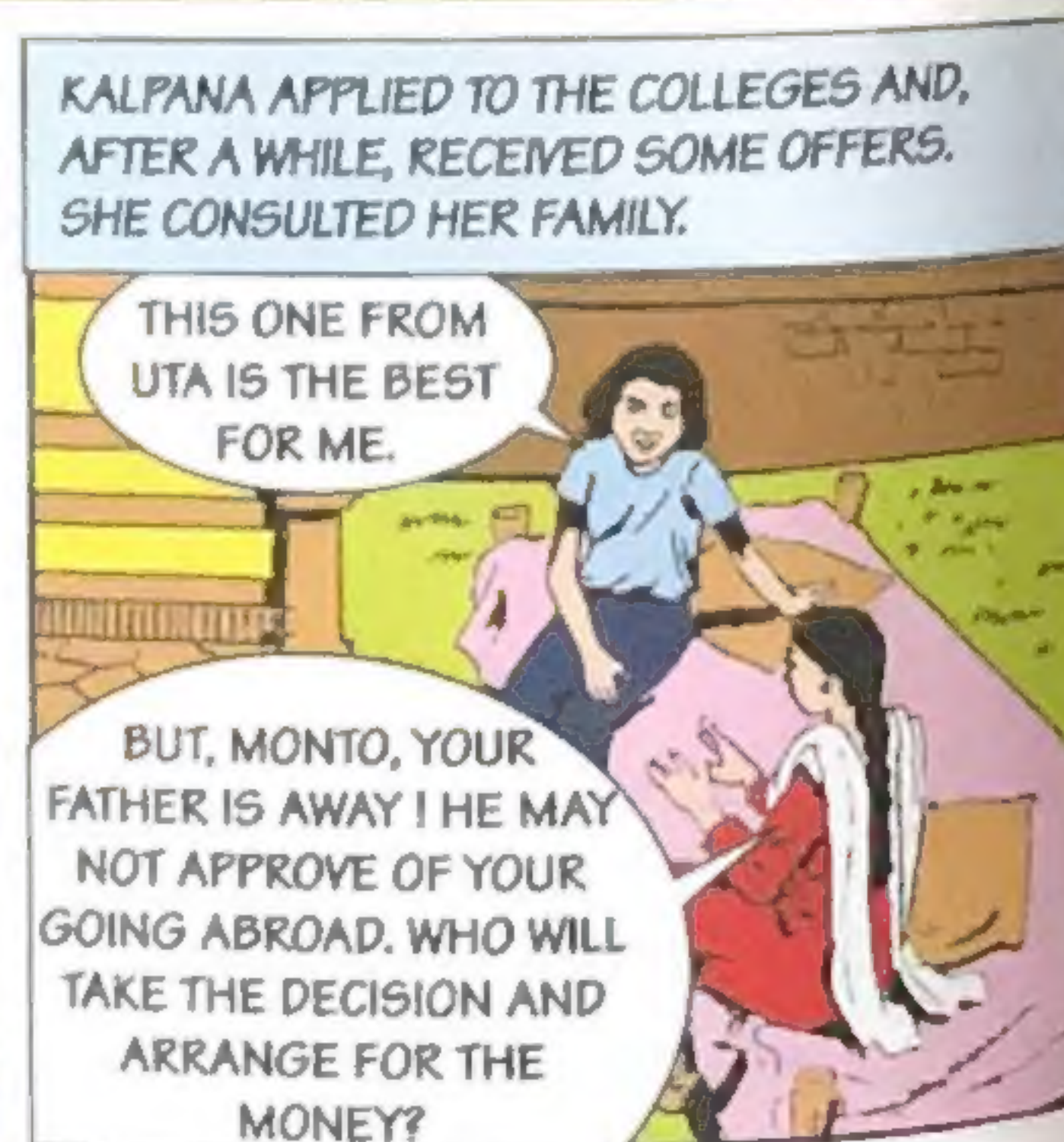
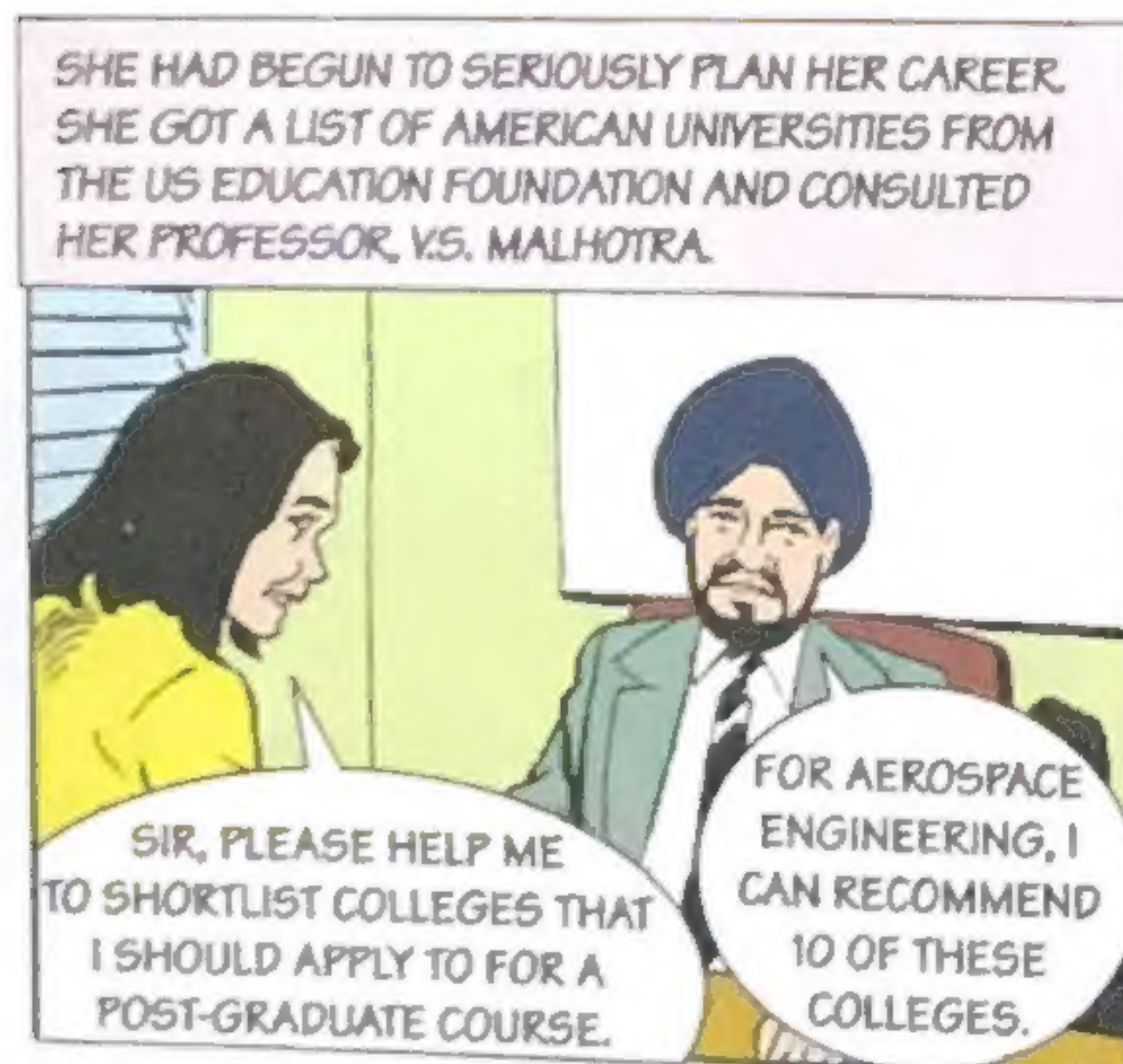
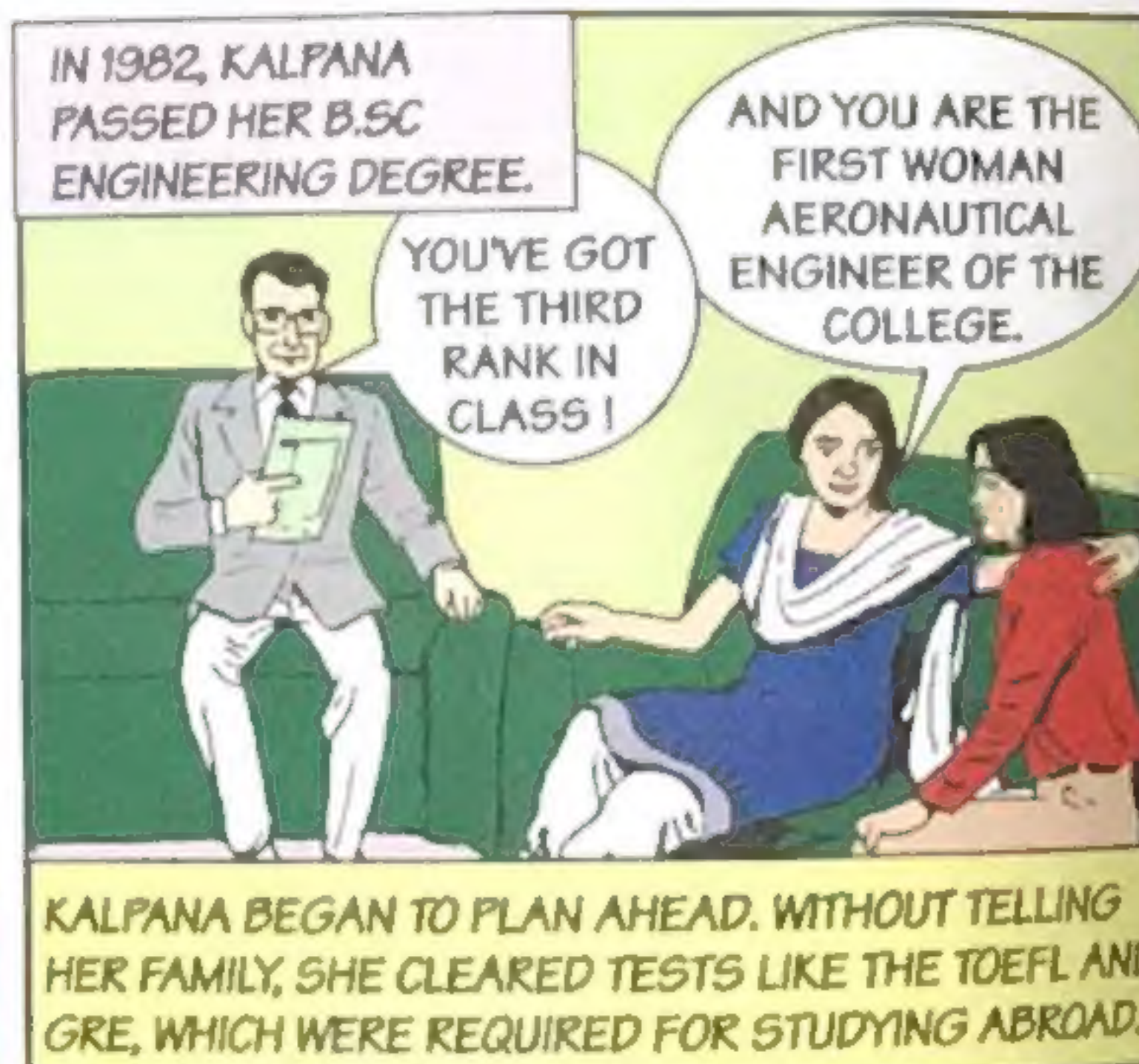
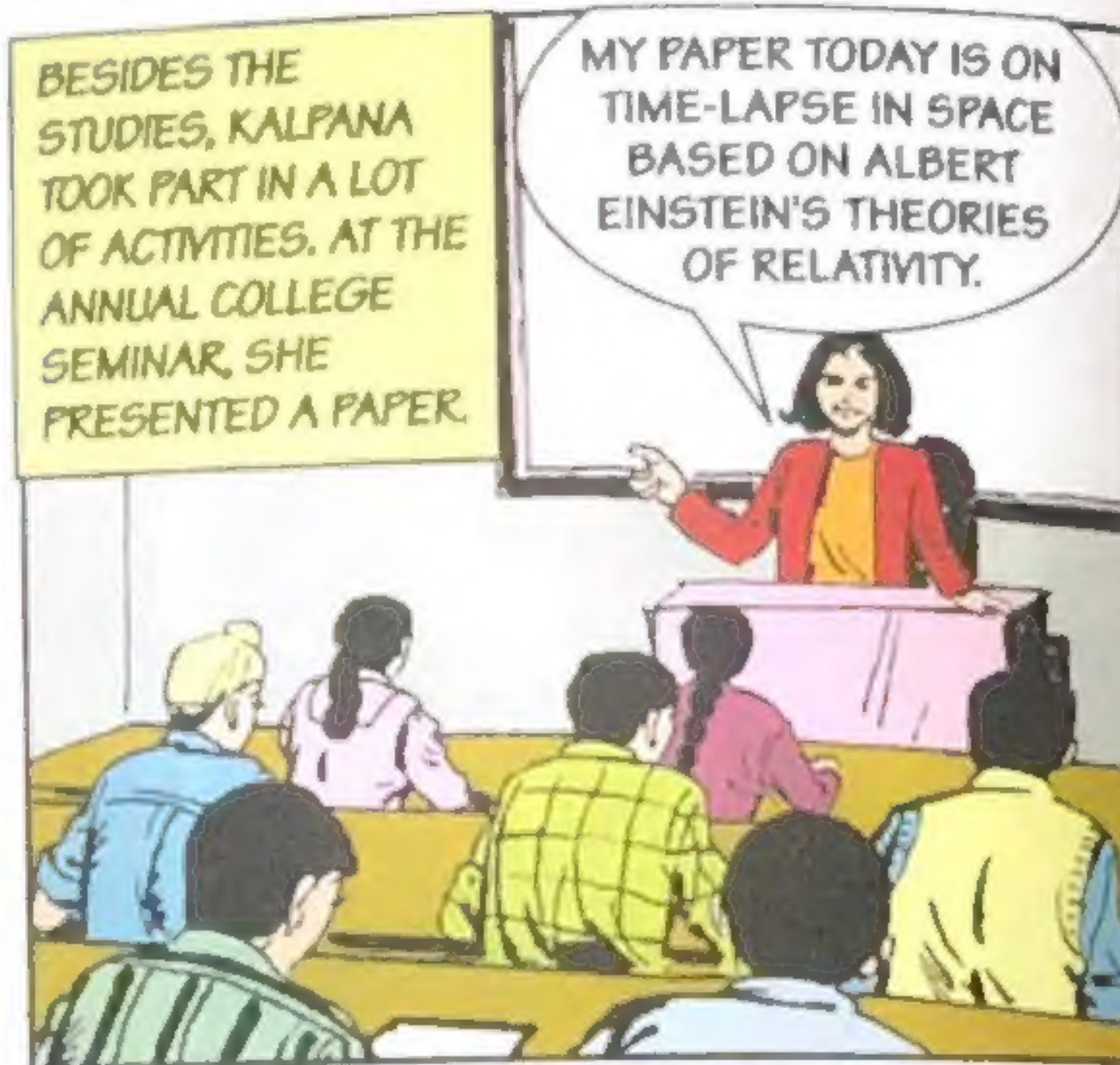
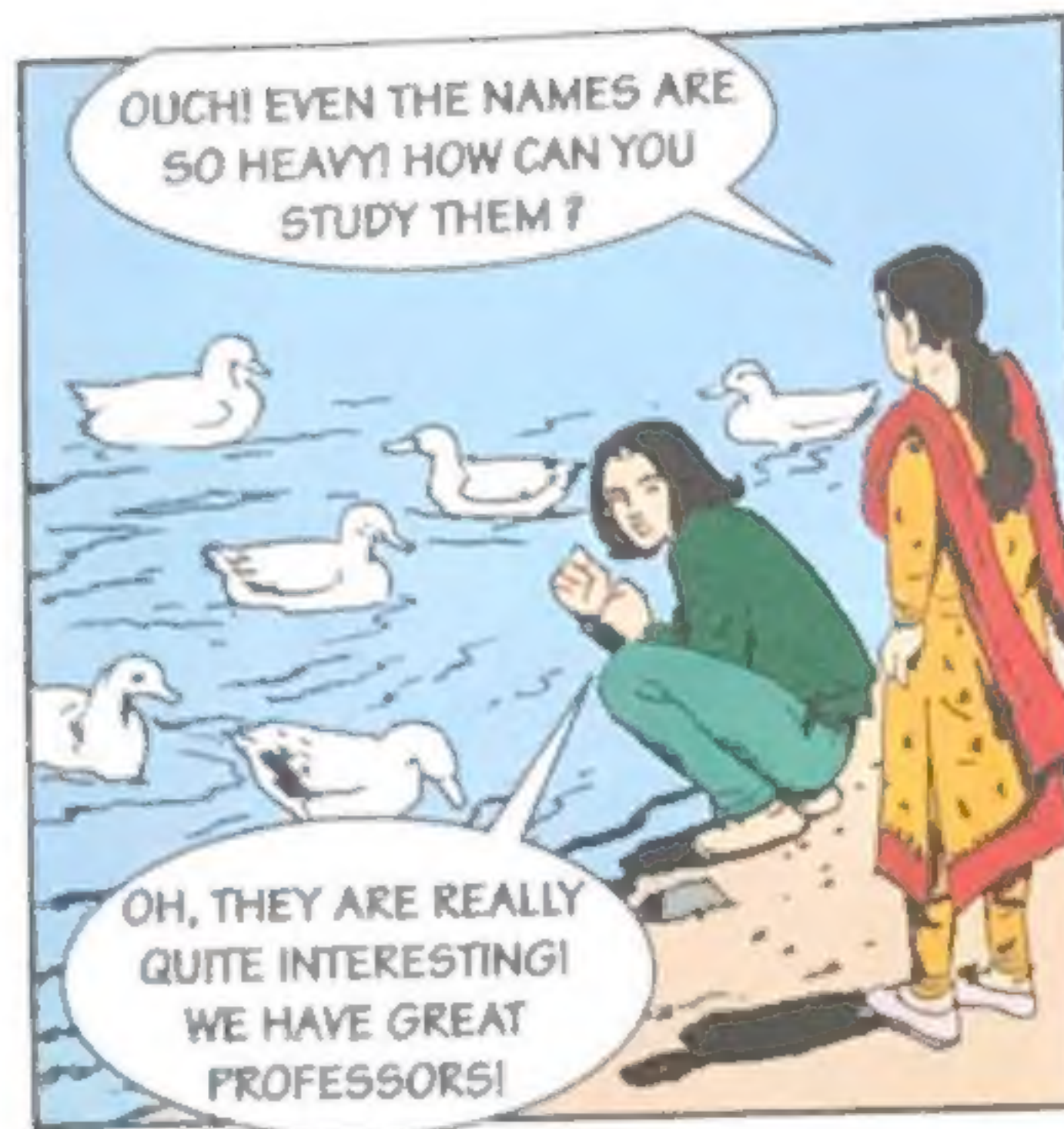


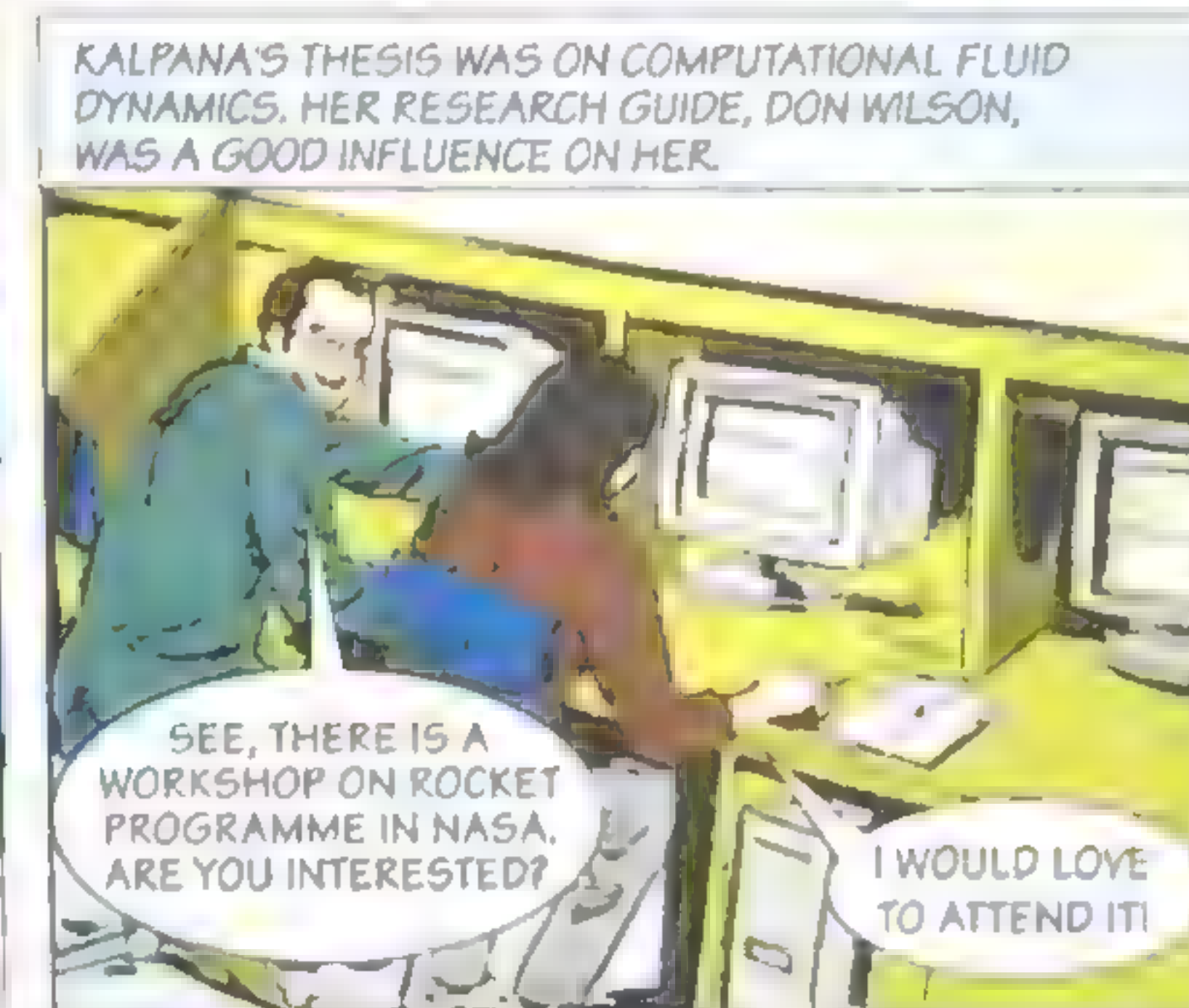
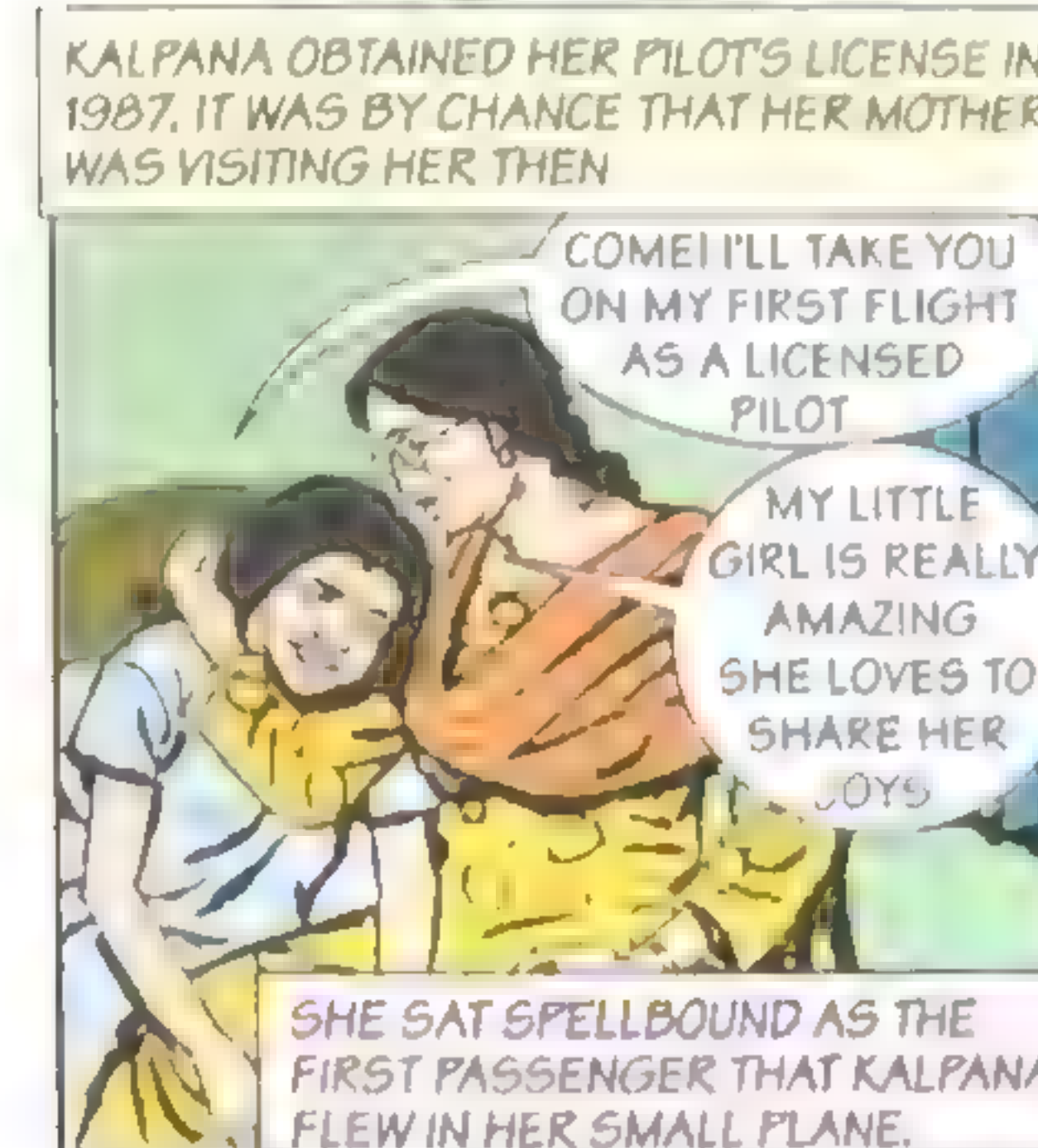
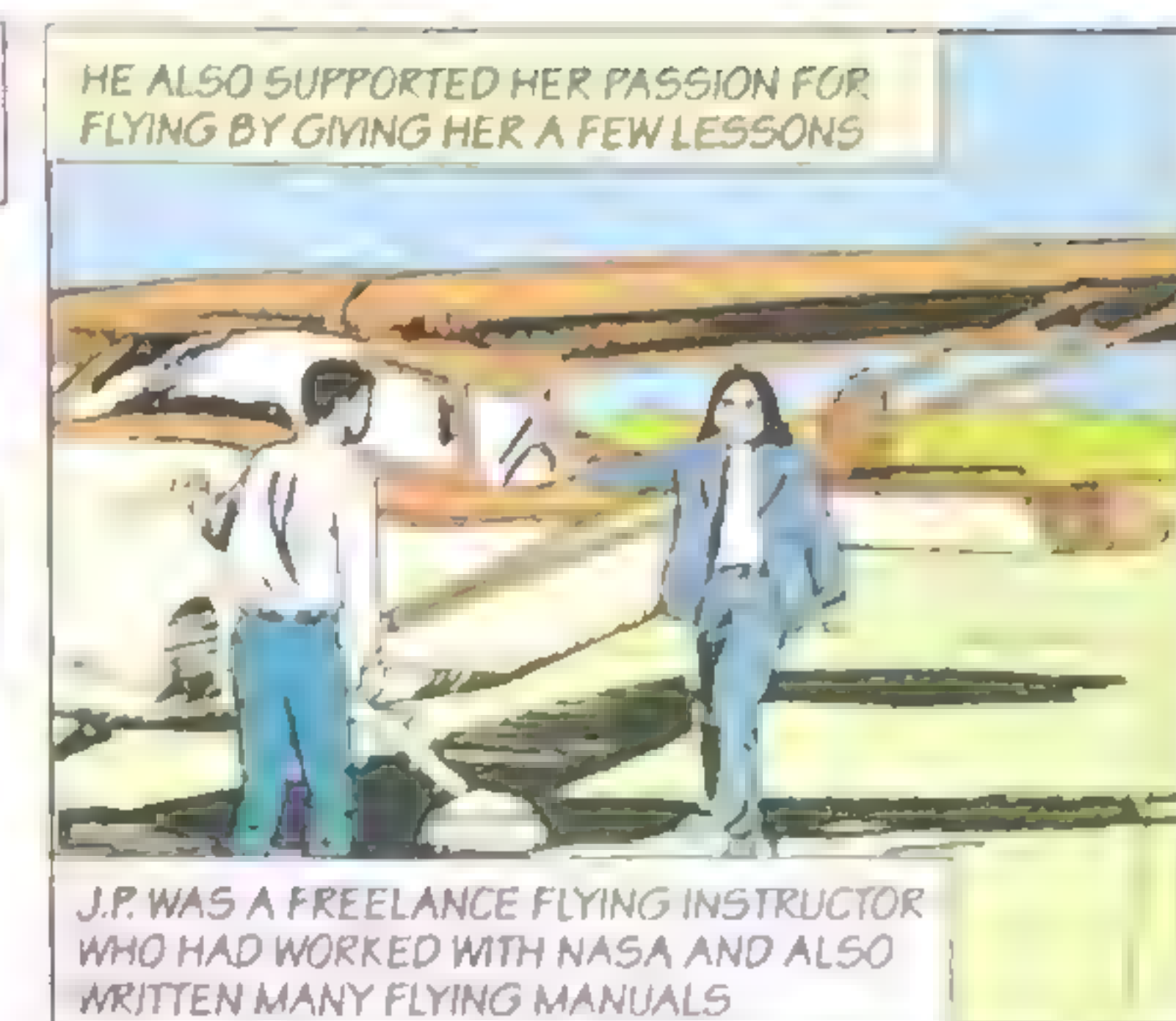
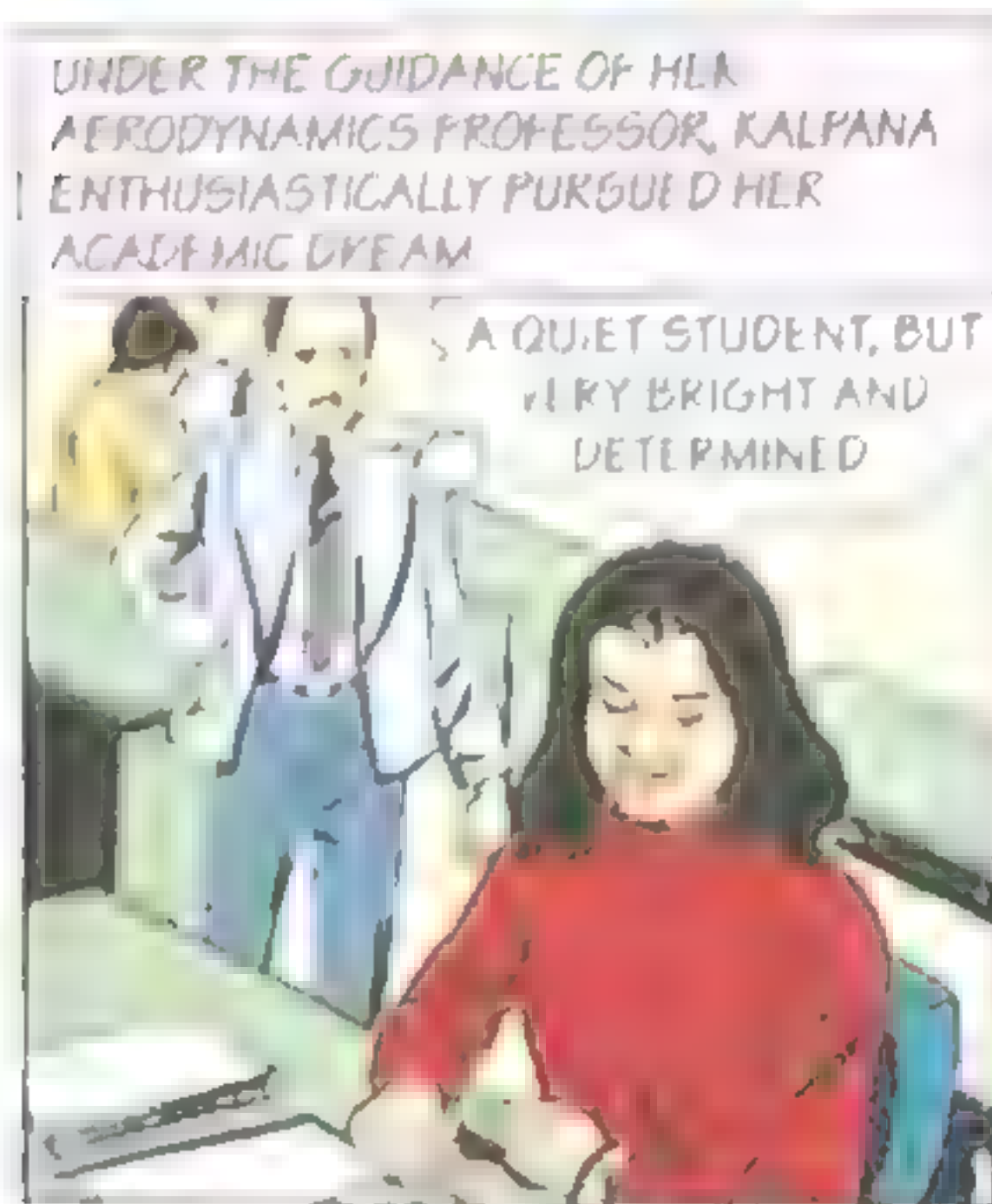
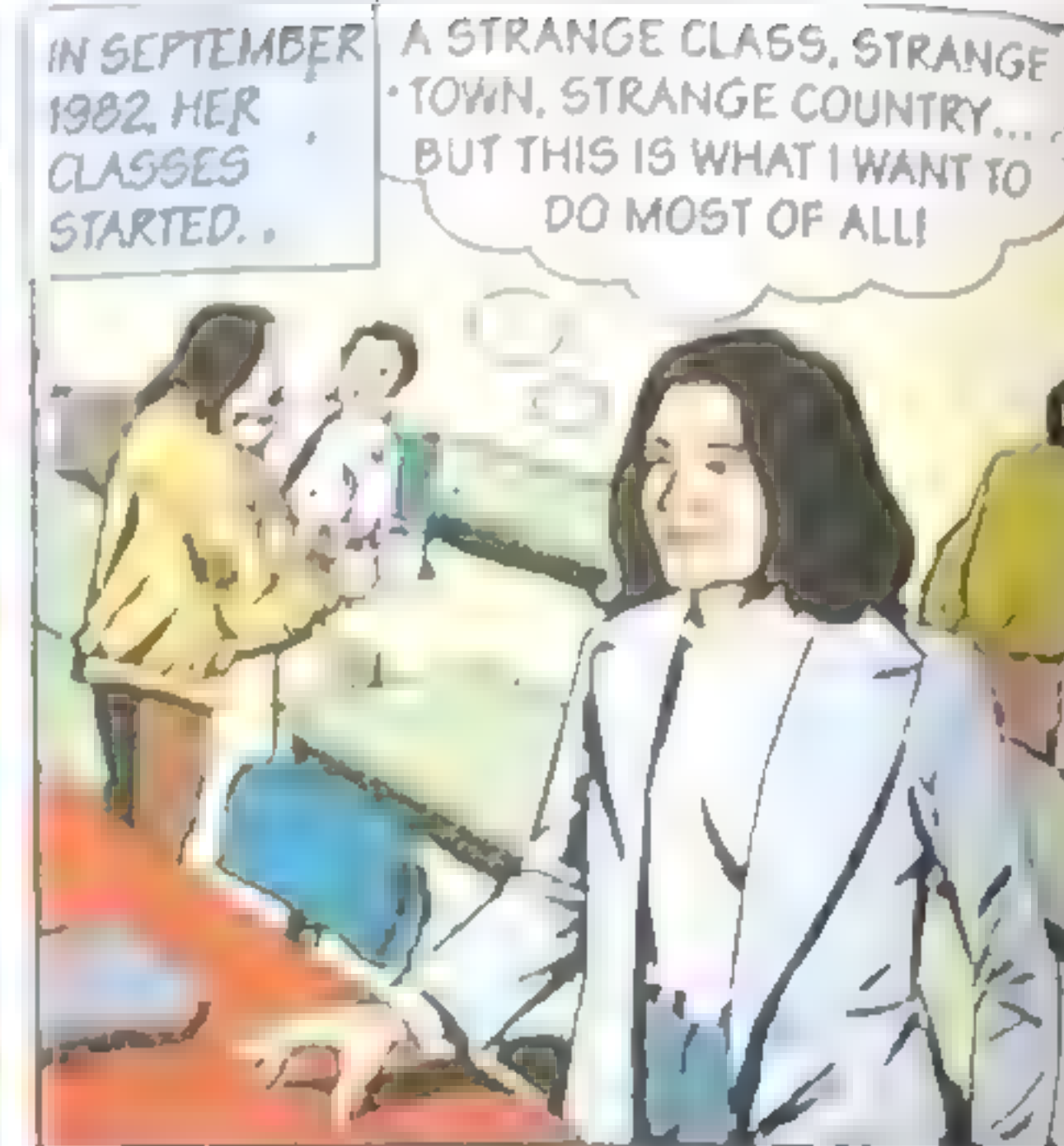
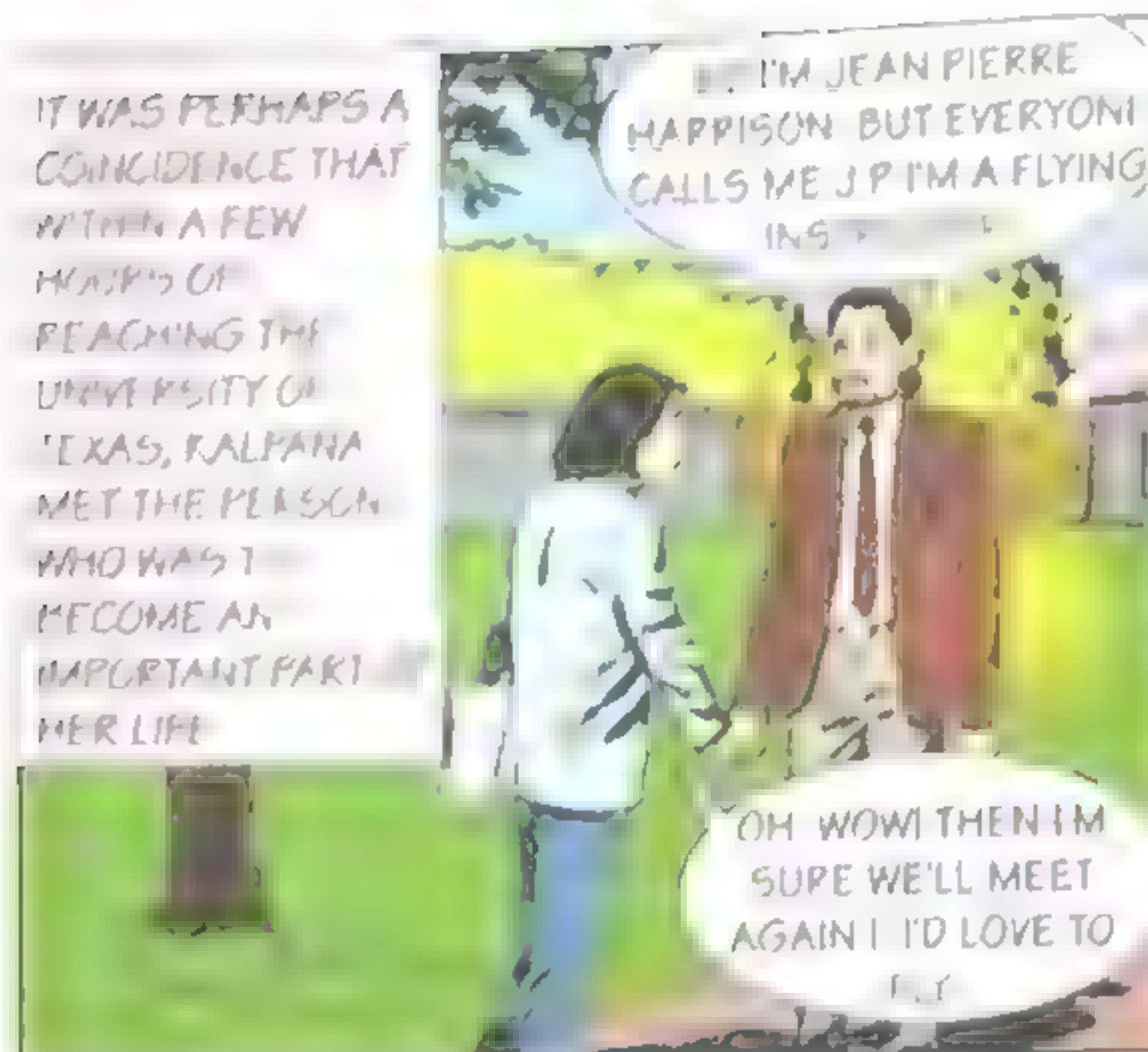
KALPANA HIRED A VIDEO CASSETTE AND A PLAYER TO PROJECT THE FILM IN A NEARBY RESTAURANT AND ORGANISED A SPECIAL SHOW FOR ALL HER CLASSMATES.



SHE FOUND TIME TO MEET HER OLD FRIENDS TOO.







HER PROFESSOR, C.Y. CHOW, WAS EXACTING BUT AFFECTIONATE. HE ALSO GUIDED HER FOR HER FUTURE CAREER.

THERE IS A RESEARCH OPENING IN COMPLEX FLUID DYNAMICS AT AMES. ARE YOU INTERESTED?

YES, INDEED!

KALPANA IS THE DAUGHTER NEVER HAD

IN 1988, KALPANA COMPLETED HER DOCTORATE THESIS AND APPLIED TO THE AMES RESEARCH CENTER, AN INSTITUTE ASSOCIATED WITH NASA.

CALIFORNIA! HERE WE COME!

KALPANA WAS 27 YEARS OLD

AT AMES, KALPANA AT FIRST WORKED ON FLUID DYNAMICS AND LATER ON AIRCRAFT FLIGHT.

FROM 1988 TO 1994, THEY LIVED AT SUNNY VALE NEAR SAN FRANCISCO

KALPANA AND J.P. MADE MANY NEW FRIENDS AND BOUGHT A SMALL TURBO AIRCRAFT.

FOR A PETITE PERSON, YOU HAVE GREAT STAMINA!

DESPITE HER BUSY LIFE AT WORK, SHE FOUND TIME FOR HER HOBBIES: HIKING, FLYING AND SCUBA DIVING.

BUT THOUGH ALL HER FRIENDS AT THE AVIATION SCHOOL TRIED TO HELP HER, KALPANA COULD NOT FLY THE PLANE. SHE WAS TOO SHORT!

LOOK! I'VE PUT THREE CUSHIONS AT THE BACK. SEE IF YOUR FEET REACH THE CONTROLS.

NO! OH, NO!

I DON'T LOVE THIS PLANE. I WISH I COULD FLY IT!

AND FLY IT YOU WILL!

DEBBY RIHN WAS HER GOOD FRIEND BY NOW.

WELL, THAT'S IT! BY THE WAY, HOW TALL ARE YOU?

FIVE FEET NOTHING!

KALPANA DID CONTINUE TO FLY, USING SMALLER PLANES. EVENTUALLY SHE GOT A COMMERCIAL PILOT'S LICENSE FOR A SINGLE ENGINE, DOUBLE ENGINE SEAPLANE AND ALSO AN INSTRUCTOR'S LICENSE.

AS SHE HOPPED ABOARD THE TWIN PROP PLANE, FOR A RIDE OVER THE MOUNTAINS. HER CHOCOLATE-BROWN EYES WERE FILLED WITH GLEE AND A SMILE LIT UP HER FACE.

SHE WAS HAPPIEST WHEN SHE WAS UP IN THE SKY

IN 1990, AT THE AGE OF 29, KALPANA BECAME AN AMERICAN CITIZEN.

I HAVE TO GIVE UP MY INDIAN NATIONALITY BUT...

IT WAS A NECESSARY STEP FOR HER TO FOLLOW HER DREAM.

IN 1993, KALPANA JOINED OVERSET METHODS INC. IN LOS ALTOS, CALIFORNIA.

YOU WILL BE TRAINED TO USE A SIMULATOR OF THE SPACE SHUTTLE COCKPIT.

HOW EXCITING! IT IS EXACTLY LIKE BEING INSIDE A SPACESHIP!

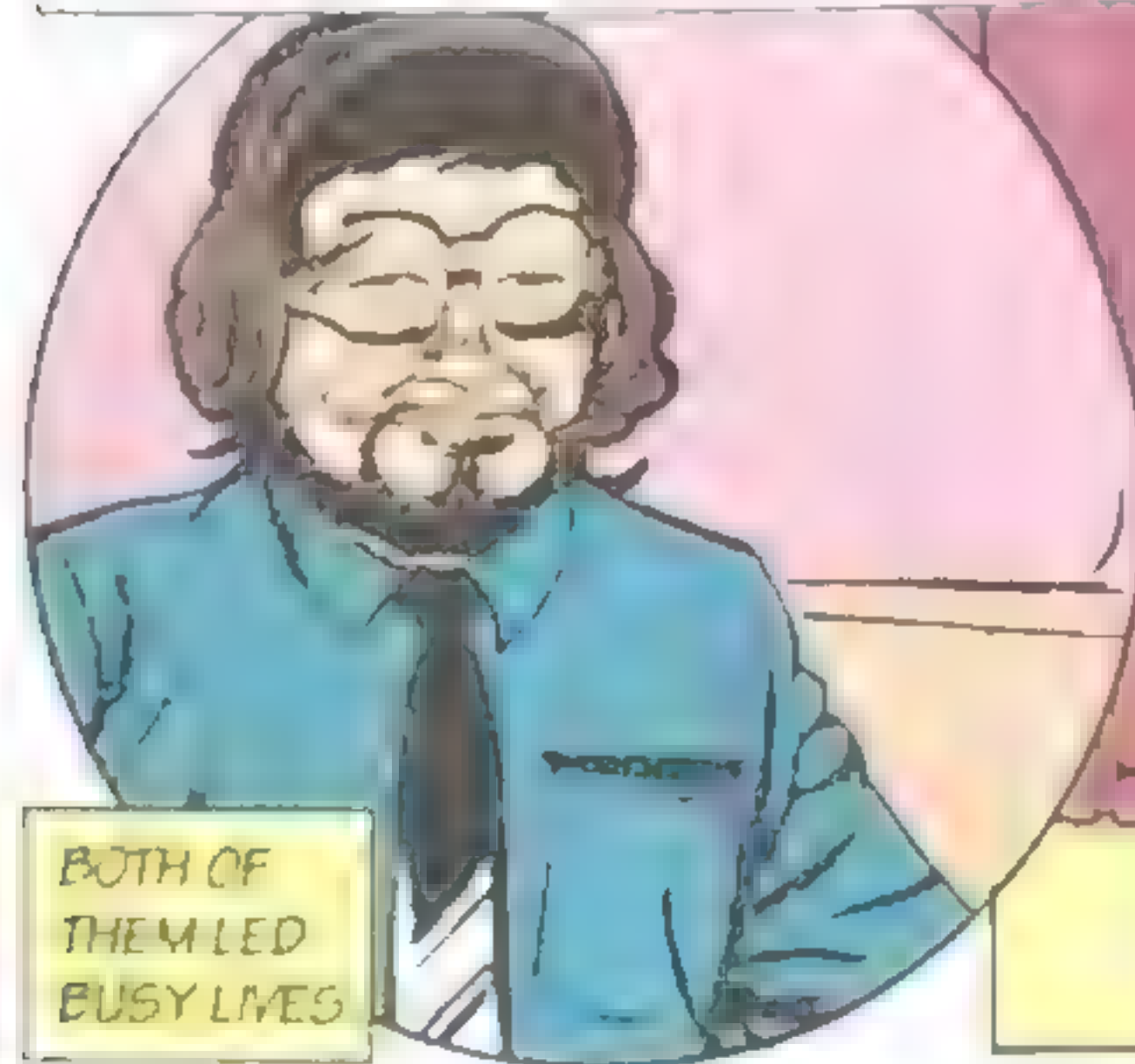
KALPANA WAS APPOINTED VICE PRESIDENT AND RESEARCH SCIENTIST. SHE WAS THE HEAD OF A TEAM THAT WORKED ON DESIGN OF AIRCRAFT. THEY STUDIED THE STABILITY OF FLUIDS UNDER CONDITIONS OF VERY LOW GRAVITY.

IT WAS AROUND THIS TIME THAT KALPANA SAW THE NASA ADVERTISEMENT.

"NASA TO SELECT ASTRONAUTS". LOOK AT THIS. IT'S WHAT YOU'VE DREAMED OF.

YES IT IS!

HARRISON HAD BECOME THE CHIEF FLYING INSTRUCTOR AT THE WEST VALLEY FLYING CLUB AT PALO ALTO AIRPORT.



BOTH OF THEM LED BUSY LIVES

YET THEY FOUND TIME TO RELAX AND ENJOY EACH OTHER'S COMPANY WITH GOOD MUSIC AND GOOD FRIENDS.



KALPANA FOUND TIME TO LEARN THE INDIAN CLASSICAL DANCE, BHARAT NATYAM, AT THE ABHINAV DANCE ACADEMY.

KALPANA WAS ATTACHED TO HER INDIAN ROOTS AND EVEN INTRODUCED HARRISON TO INDIAN COOKING.



NOW PUT A PINCH OF THE YELLOW POWDER, THE RED POWDER AND BROWN POWDER.

WOW! COLOURFUL COOKING, I MUST SAY!

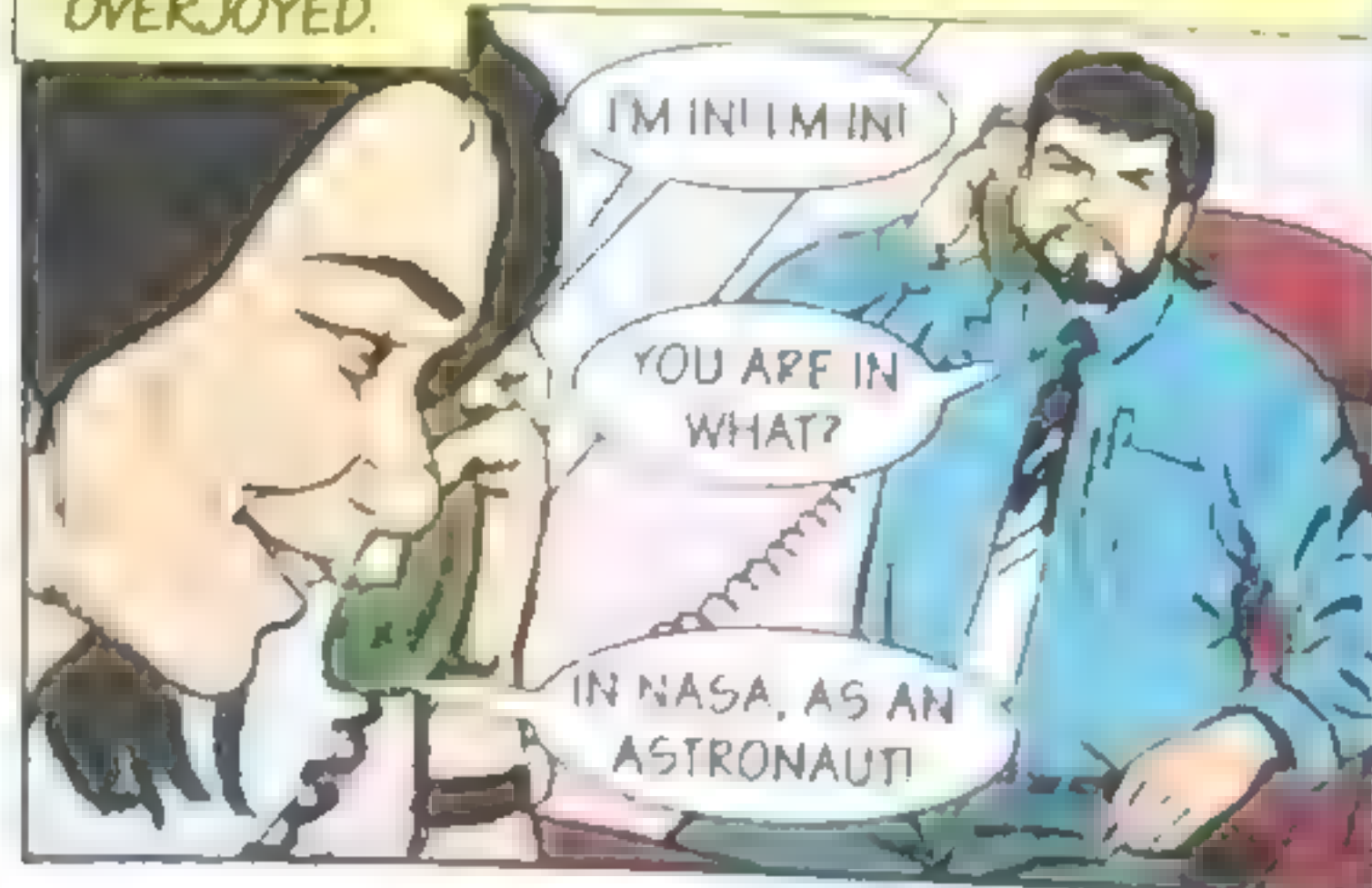
KALPANA LOVED TO GO BIKING, ESPECIALLY ON FULL MOON NIGHT.



THERE IS SOMETHING MAGICAL ABOUT THE MOONLIGHT!

IN PALO ALTO, THERE WERE MANY OPPORTUNITIES FOR SUCH OUTDOOR ACTIVITIES AND HOBBIES.

KALPANA WAS NOT SELECTED AS AN ASTRONAUT WHEN SHE APPLIED THE FIRST TIME TO NASA. SHE TRIED AGAIN, PASSED THE WRITTEN TEST, WAS CALLED FOR AN INTERVIEW AND RECEIVED THE CALL LETTER FROM NASA IN DECEMBER 1994. SHE WAS OVERJOYED.

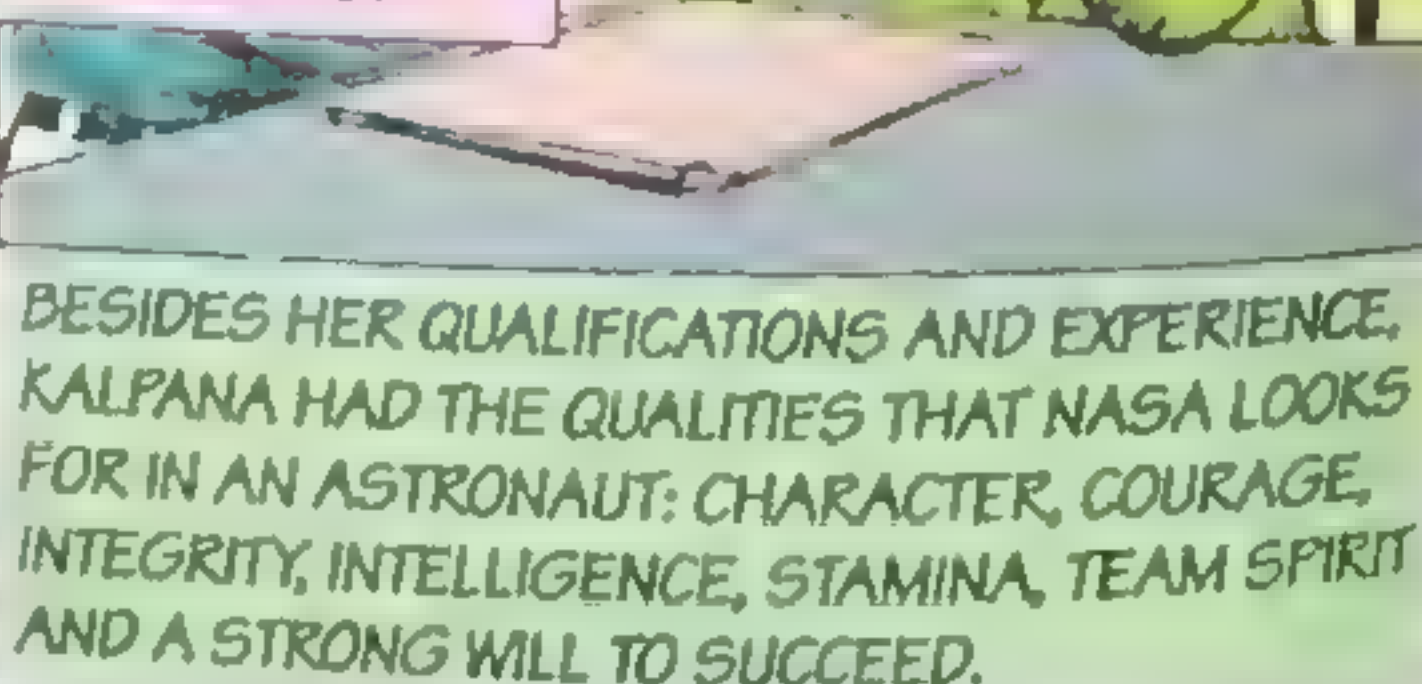


I'M IN! I'M IN!

YOU ARE IN WHAT?

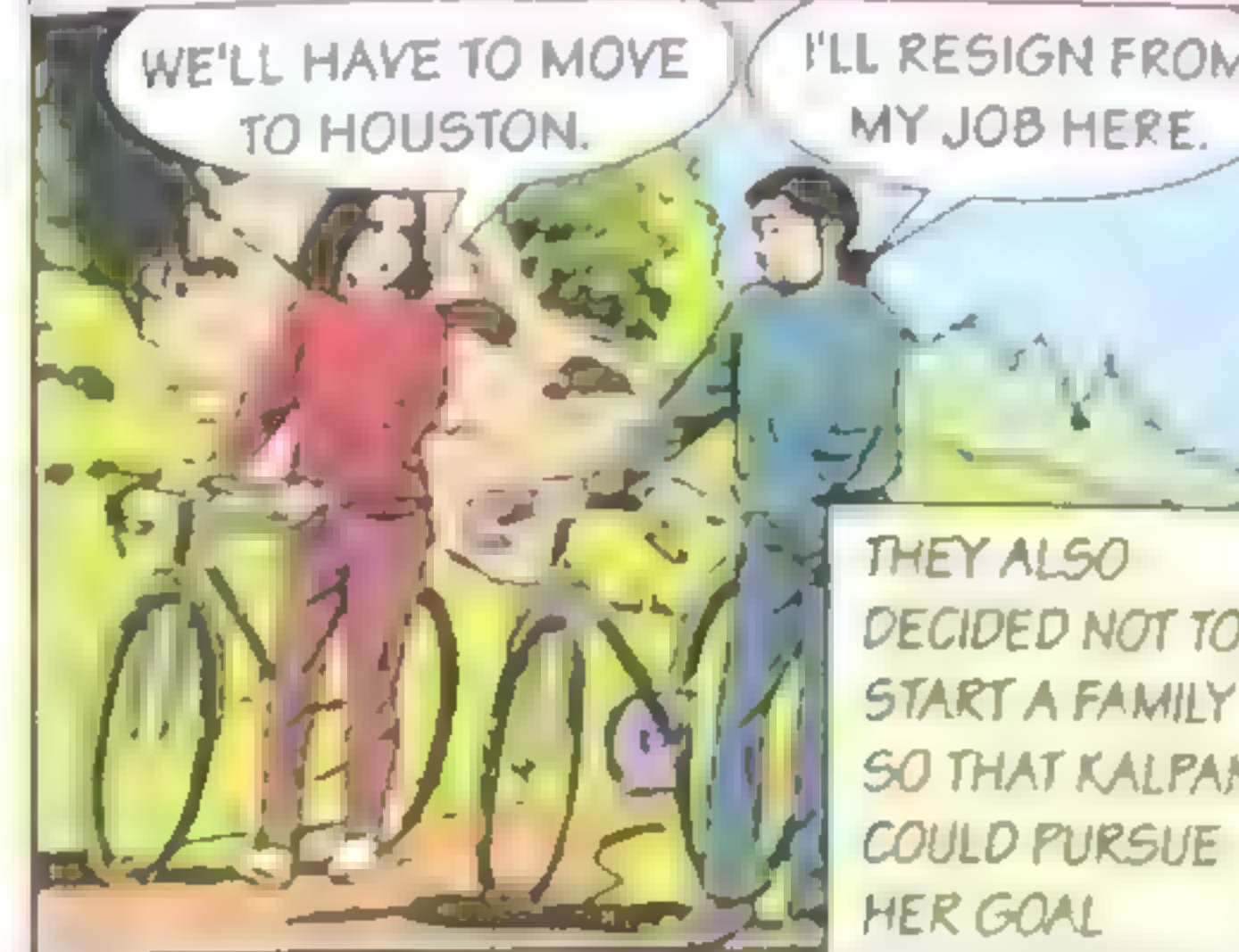
IN NASA, AS AN ASTRONAUT!

SHE WAS AMONG THE 23 PEOPLE SELECTED FOR TRAINING AS AN ASTRONAUT. IT WAS A JOB FOR WHICH THERE WERE 2,962 APPLICANTS.



BESIDES HER QUALIFICATIONS AND EXPERIENCE, KALPANA HAD THE QUALITIES THAT NASA LOOKS FOR IN AN ASTRONAUT: CHARACTER, COURAGE, INTEGRITY, INTELLIGENCE, STAMINA, TEAM SPIRIT AND A STRONG WILL TO SUCCEED.

SHE HAD TO GO TO THE JOHNSON SPACE CENTER IN HOUSTON FOR A YEAR OF TRAINING AND EVALUATION. IT WAS TIME TO MAKE ONE MORE MAJOR DECISION.



WE'LL HAVE TO MOVE TO HOUSTON.

I'LL RESIGN FROM MY JOB HERE.

THEY ALSO DECIDED NOT TO START A FAMILY SO THAT KALPANA COULD PURSUE HER GOAL

IN MARCH 1995, KALPANA AND HER TEAMMATES JOINED THE NASA ASTRONAUT TRAINING CAMP



NOW YOU ARE ASCANS ASTRONAUT CANDIDATES. YOU WILL BE TRAINED TO GO UP IN SPACE AND LIVE IN A SPACECRAFT

A PART OF THE TRAINING TOOK PLACE INSIDE MOCK SHUTTLES



THIS IS AN EXACT REPLICA OF THE SPACE SHUTTLE THAT WILL TAKE YOU UP. YOU MUST LEARN HOW TO LIVE, WORK AND OPERATE THIS SHUTTLE.



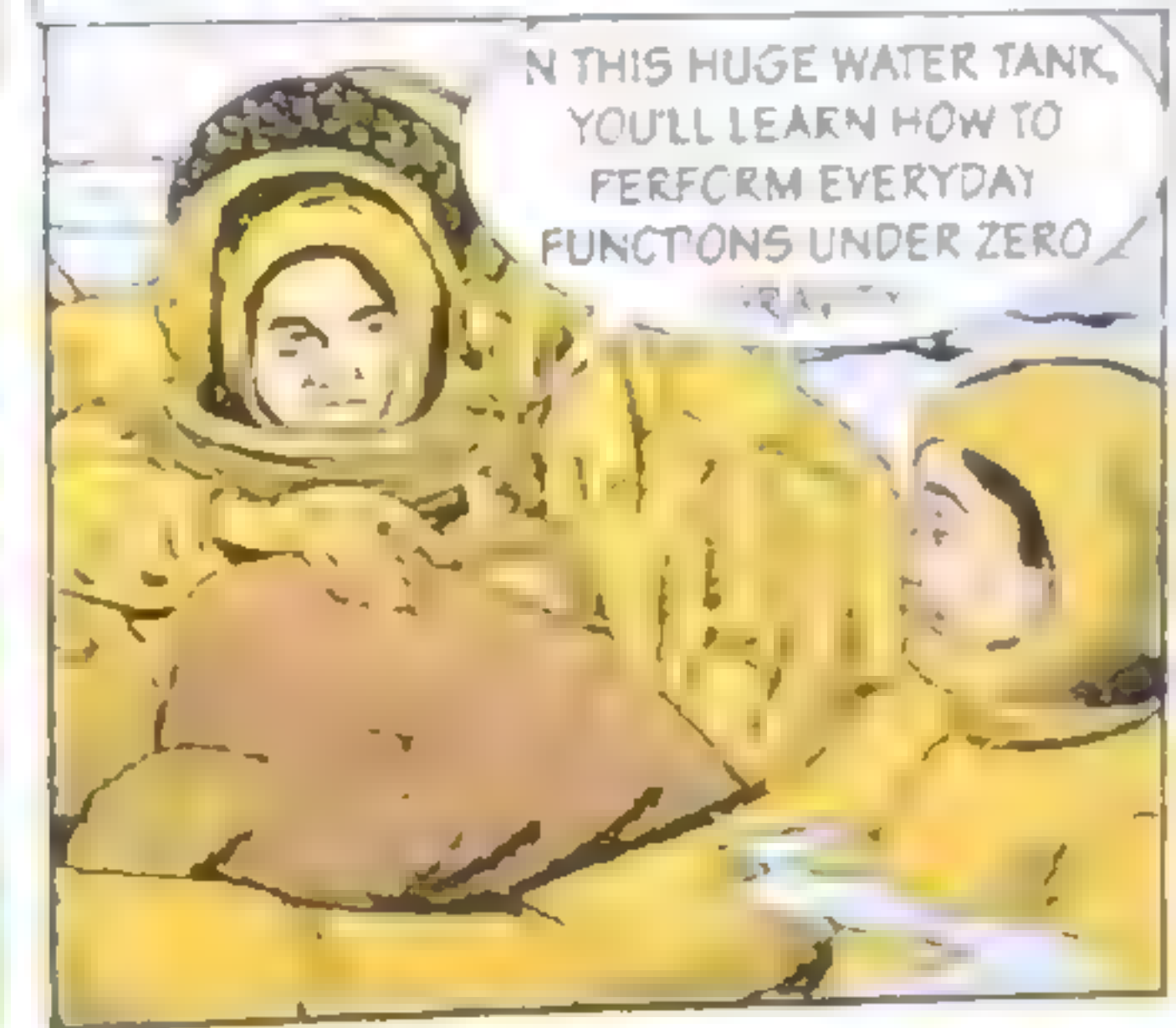
IT WAS A TOUGH TRAINING PROGRAM

IT WAS A TOUGH TRAINING PROGRAM

TO TEST THEIR PHYSICAL ENDURANCE, STAMINA AND SURVIVAL SKILLS DURING CRISIS, THEY WERE DROPPED OVER MOUNTAINS AND JUNGLES WITHOUT FOOD AND WATER AND HAD TO FIND THEIR WAY BACK ON THEIR OWN

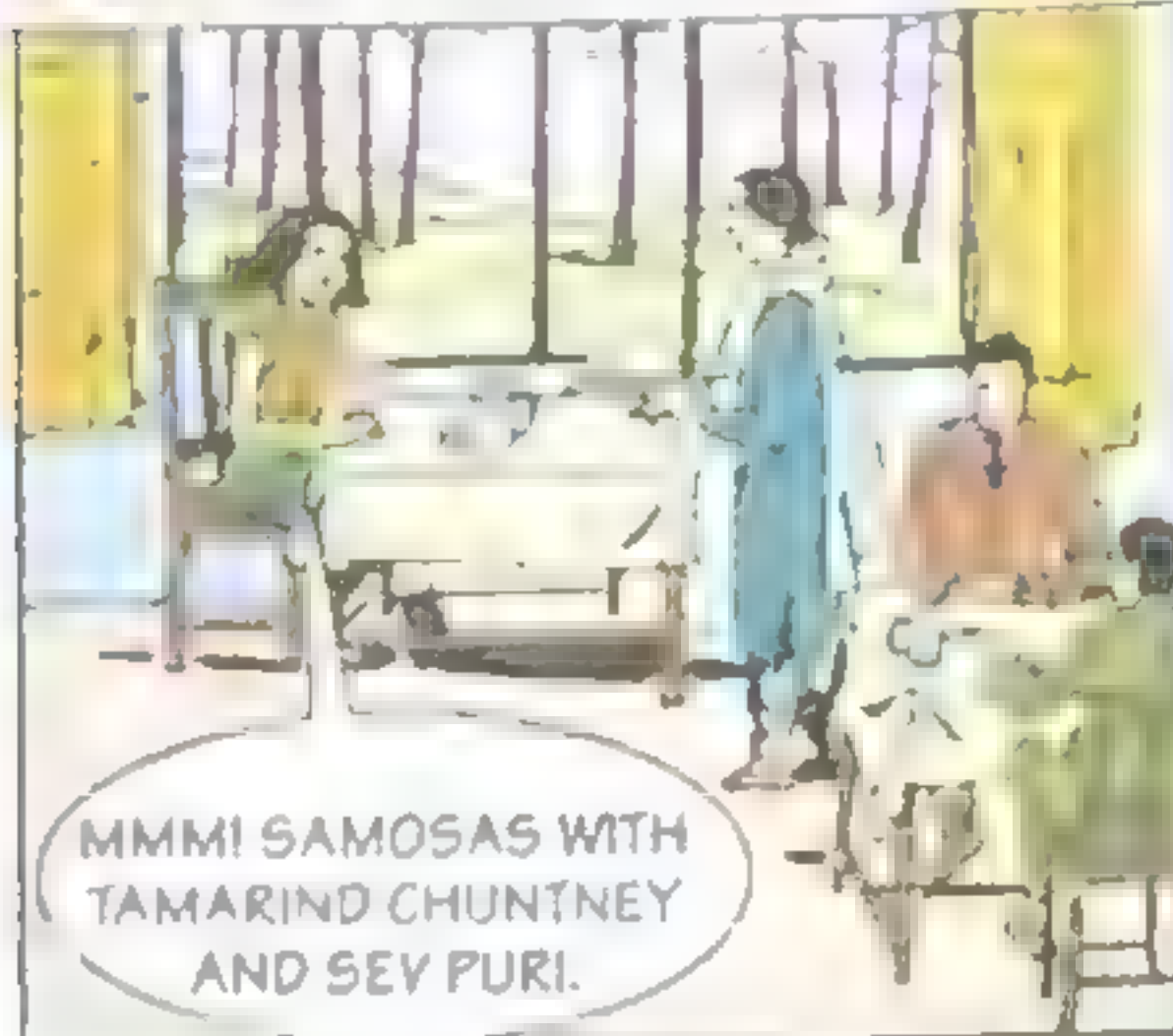


FOR FOURTEEN MONTHS, KALPANA AND HER FELLOW TEAMMATES LEARNED ABOUT LIVING IN A GRAVITY-LESS ENVIRONMENT



IN THIS HUGE WATER TANK, YOU'LL LEARN HOW TO PERFORM EVERYDAY FUNCTIONS UNDER ZERO GRAVITY

WHEN SHE HAD TIME FROM HER RIGOROUS TRAINING, KALPANA LOVED TO RELAX AT HER FAVOURITE EATERY AT CLEAR LAKE NEAR NASA COMPLEX IN HOUSTON



MMMI SAMOSAS WITH TAMARIND CHUNTNEY AND SEV PURI.

KALPANA KEPT IN CLOSE TOUCH WITH HER FAMILY, FRIENDS AND OLD SCHOOL TEACHERS IN SPITE OF HER HECTIC LIFESTYLE. HER FAMILY OFTEN VISITED HER HOME IN TEXAS.



COME SIT WITH US, DIDI

OK YOUR TURN TO DEAL NOW!

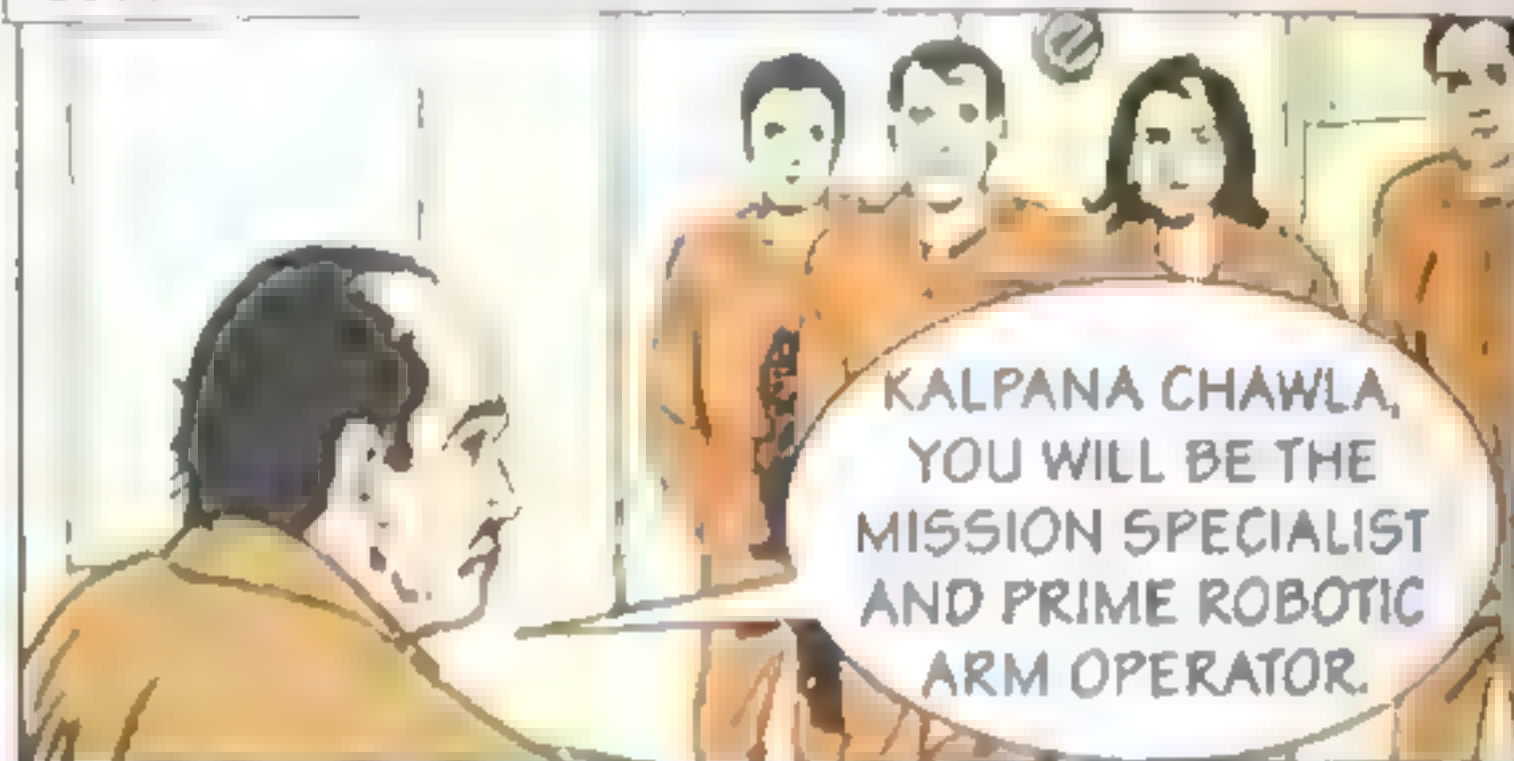
KALPANA QUALIFIED AS A NASA ASTRONAUT, BUT NOT ALL ASTRONAUTS GET A CHANCE TO JOURNEY INTO SPACE. IN 1996, SHE GOT A CALL FROM ASTRONAUT DAVID LEESTMA.

KALPANA CHAWLA, WOULD YOU BE INTERESTED IN WORKING WITH ME?

WOW! THIS MEANS I HAVE BEEN SELECTED FOR A SPACE MISSION!



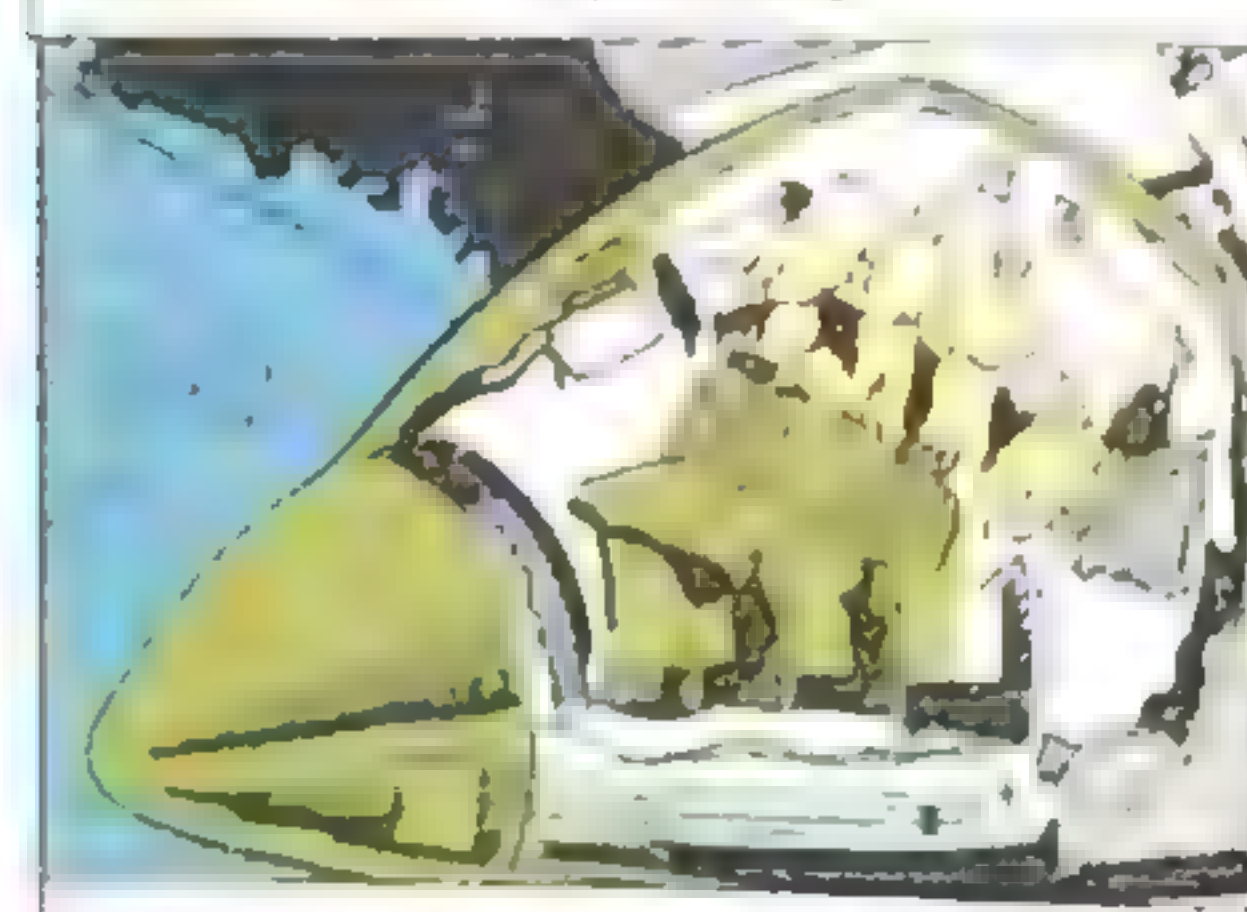
SHE WAS SELECTED FOR THE SPACE SHUTTLE MISSION, SPACE TRANSPORTATION SYSTEM-87 OR STS-87. 'COLUMBIA' WAS THE SHUTTLE CHOSEN FOR IT.



KALPANA CHAWLA, YOU WILL BE THE MISSION SPECIALIST AND PRIME ROBOTIC ARM OPERATOR.

THE MISSION SPECIALIST IS AN ASTRONAUT WITH A TECHNICAL BACKGROUND, WHO CO-ORDINATES THE VARIOUS ACTIVITIES OF THE SHUTTLE.

THE SPACE SHUTTLE IS LIKE A HUGE PLANE WITH A PAYLOAD BAY WHERE ALL EQUIPMENT, SATELLITES AND EXPERIMENT MATERIAL ARE KEPT. IN THIS AREA, THE ASTRONAUTS CONDUCT THEIR EXPERIMENTS



THERE IS A CREW CABIN WHERE THE ASTRONAUTS LIVE, EAT AND SLEEP. EVERYTHING HAS TO BE TIGHTLY FITTED IN AND THE INTERIOR LOOKS CRAMPED.



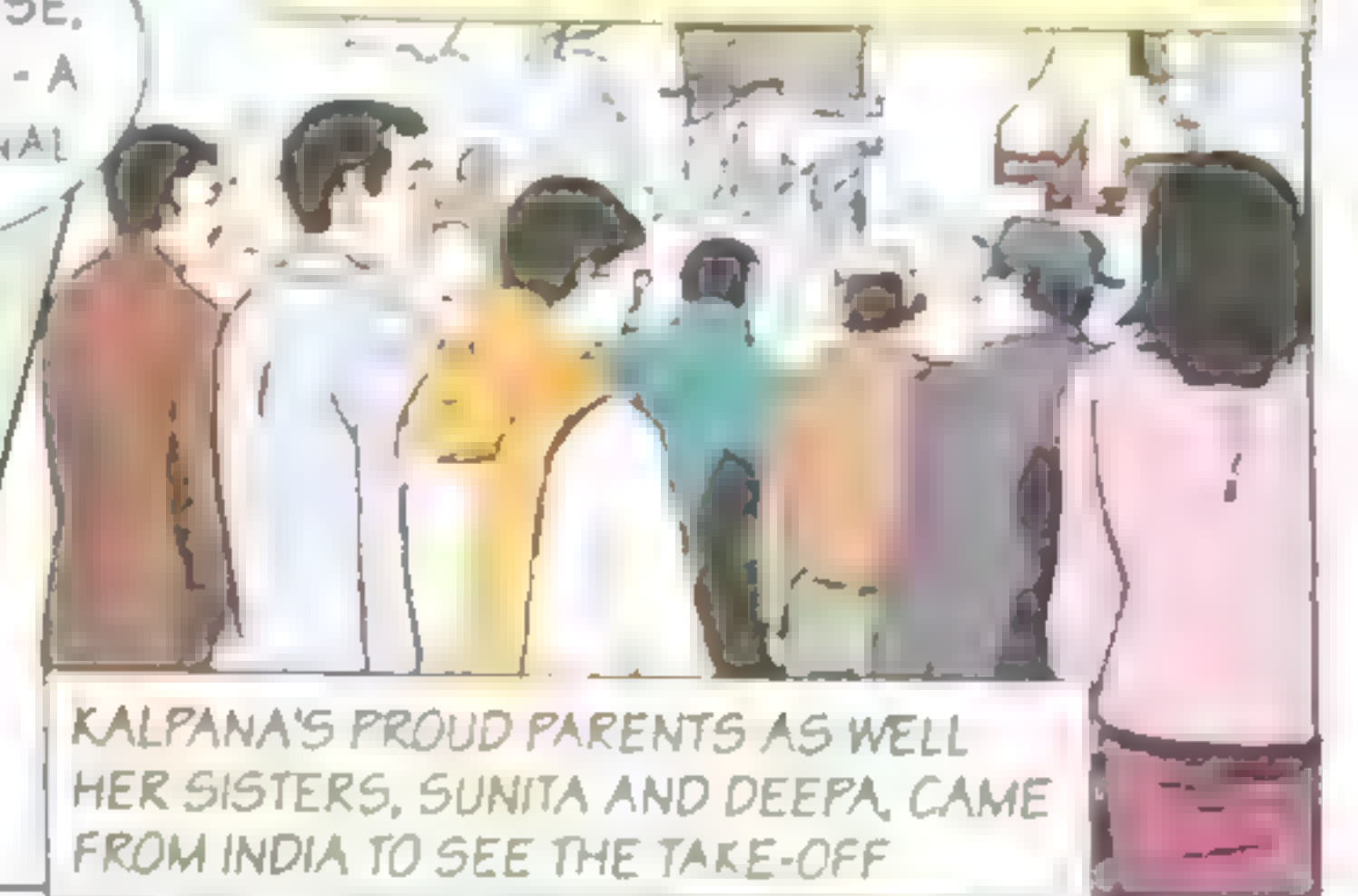
BESIDES KALPANA, THE CREW FOR STS-87 ALSO INCLUDED COMMANDER KEVIN KREGEL, MISSION SPECIALIST WINSTON SCOTT, TAKAO DOI, PILOT STEVEN LINDSEY AND PAYLOAD SPECIALIST LEONID KADENYUK.



AMERICAN, JAPANESE, UKRAINIAN, INDIAN - A TRULY INTERNATIONAL CREW

KREGEL, LINDSEY AND SCOTT WERE AMERICAN; DOI WAS JAPANESE; KADENYUK, A UKRAINIAN; AND KALPANA OF INDIAN ORIGIN

THE STS-87 WAS TO BE SHOT INTO SPACE ON OCTOBER 9, 1997, BUT THE DATE WAS LATER CHANGED TO NOVEMBER 17. CLAD IN THE HUGE ORANGE ASTRONAUT GEAR, KALPANA WAS READY.



KALPANA'S PROUD PARENTS AS WELL HER SISTERS, SUNITA AND DEEPA, CAME FROM INDIA TO SEE THE TAKE-OFF

THE ASTRONAUTS WERE STRAPPED INTO THEIR SEATS AND THE COUNTDOWN BEGAN. AS THE BOOSTER ROCKETS WERE FIRED, THE SHUTTLE LEAPED UP INTO THE SKY.



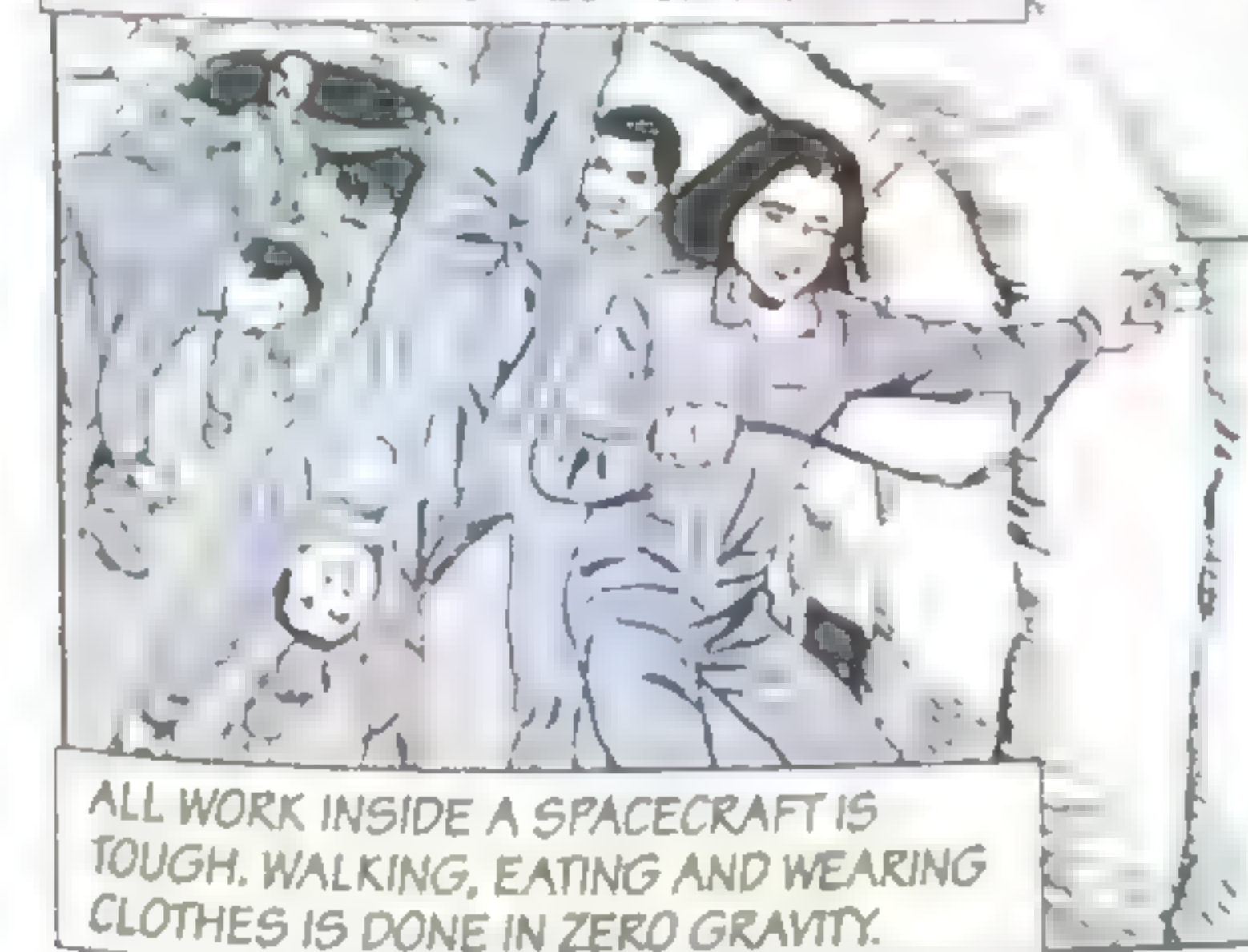
FOR TWO MINUTES, KALPANA FELT A CRUSHING PRESSURE ON HER CHEST.

THEN THE GRAVITY REDUCED AND HER ARMS FLOATED UP AS IF SHE WAS SWIMMING.



SOON THE SHUTTLE ORIENTED ITSELF TO ORBIT THE EARTH AT AN ALTITUDE OF 185-650 KM AT A SPEED OF 28,000 KM/HOUR.

KALPANA AND HER TEAM COULD NOW DISCARD THEIR HEAVY SUITS AND WEAR COMFORTABLE CLOTHES FOR THEIR WORK.

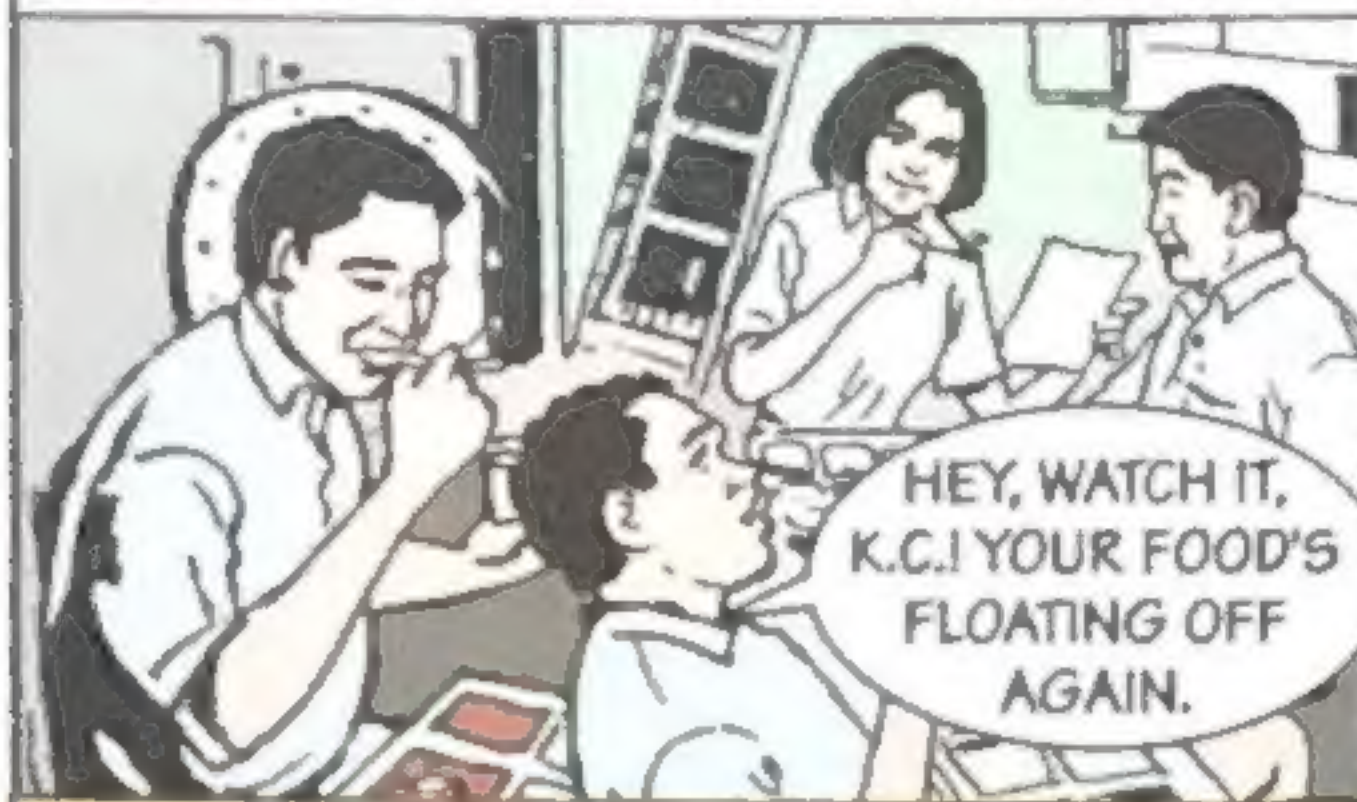


ALL WORK INSIDE A SPACECRAFT IS TOUGH. WALKING, EATING AND WEARING CLOTHES IS DONE IN ZERO GRAVITY.

THERE WAS NO DAY OR NIGHT, AS THE SUN WAS ALWAYS VISIBLE, BUT THE CREW HAD EIGHT HOURS SLEEP AND EVERY PART OF THEIR WORKING TIME WAS PLANNED FOR ACTIVITY



EVEN ON BOARD, KALPANA WAS A STRICT VEGETARIAN. SHE ALWAYS ATE HER MEALS LOOKING OUT OF THE WINDOW, ENJOYING THE VIEW. ENGROSSSED BY THE SIGHTS OF SPACE, KALPANA WOULD OFTEN MISS HER MOUTH.



HEY, WATCH IT, K.C.! YOUR FOOD'S FLOATING OFF AGAIN.

SHE HAD A WIDE CHOICE OF FOOD, INCLUDING PASTA, RICE PILAF, TORTILLAS, FRUITS AND MILK SHAKES.

WHILE THEY CONDUCTED EXPERIMENTS AND MANOEUVERED THE SPACECRAFT, THE CREW ALSO GOT TIME TO TALK TO THEIR FAMILIES, SEND E-MAILS, LISTEN TO THEIR FAVOURITE MUSIC AND HOLD VIDEO CONFERENCES WITH MEDIA ON EARTH.

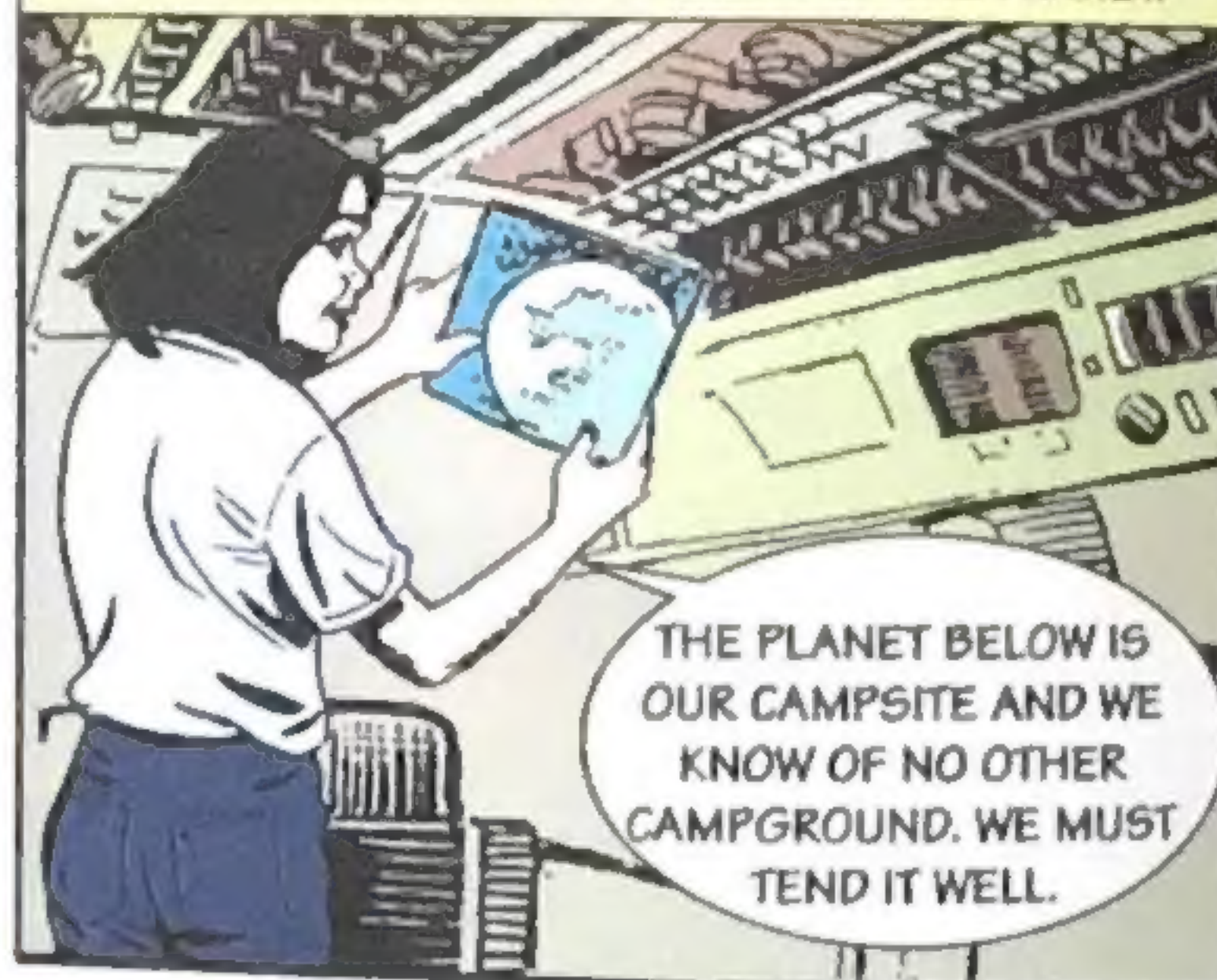


SEVEN HOURS AFTER THE LAUNCH, COLUMBIA CROSSED OVER THE INDIAN SUB-CONTINENT. KALPANA FELT EXCITED WHEN SHE PEEKED OUT OF THE WINDOW.



SEE! THAT'S WHERE MY HOMETOWN KARNAL IS SITUATED.

SHE TOOK MANY PHOTOGRAPHS OF THE EARTH AND BECAME AWARE OF THE FRAGILITY OF THE PLANET.



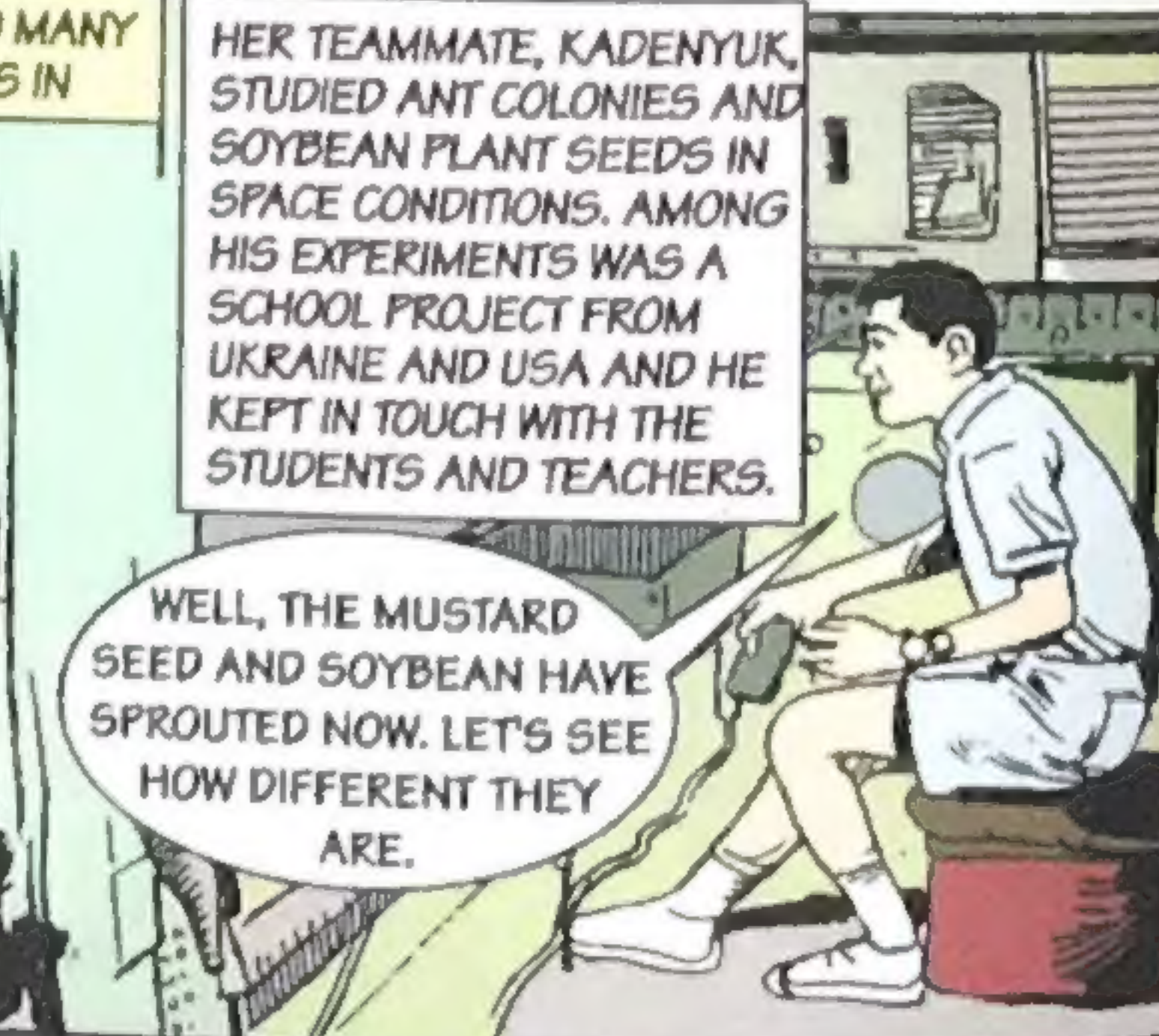
THE PLANET BELOW IS OUR CAMPSITE AND WE KNOW OF NO OTHER CAMPGROUND. WE MUST TEND IT WELL.

AS THE MISSION SPECIALIST, KALPANA HAD TO DO MANY EXPERIMENTS FOR TESTING METALS SILICON CHIPS IN ZERO GRAVITY.

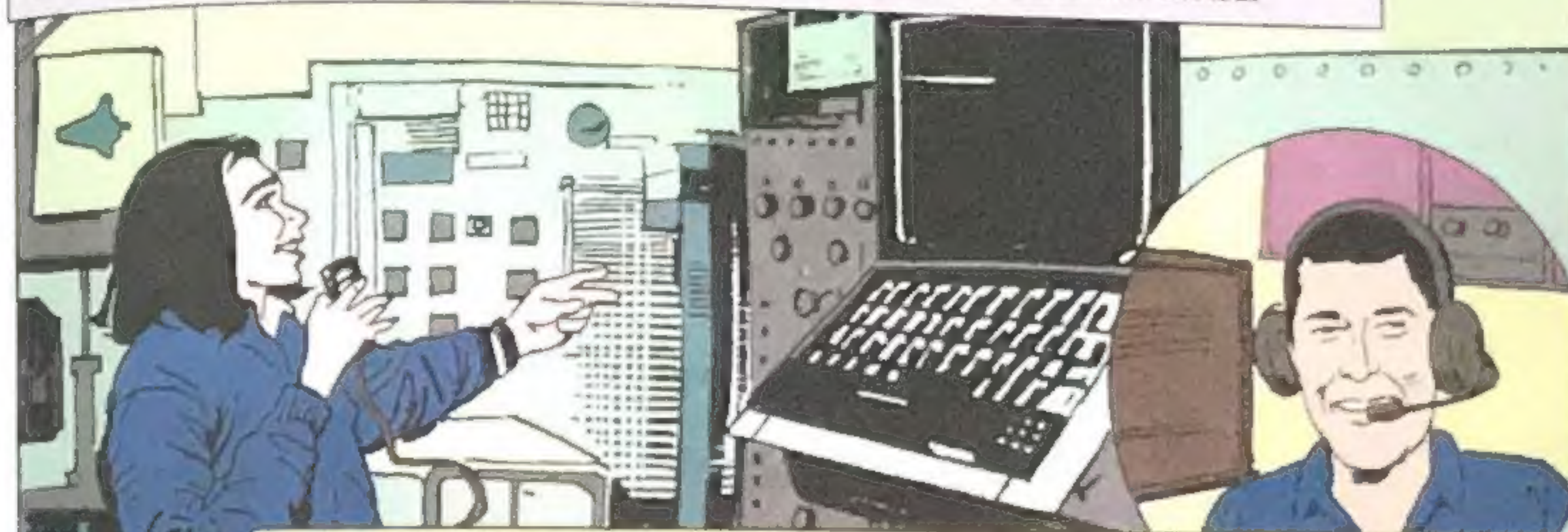


HER TEAMMATE, KADENYUK, STUDIED ANT COLONIES AND SOYBEAN PLANT SEEDS IN SPACE CONDITIONS. AMONG HIS EXPERIMENTS WAS A SCHOOL PROJECT FROM UKRAINE AND USA AND HE KEPT IN TOUCH WITH THE STUDENTS AND TEACHERS.

WELL, THE MUSTARD SEED AND SOYBEAN HAVE SPROUTED NOW. LET'S SEE HOW DIFFERENT THEY ARE.



AMONG KALPANA'S DUTIES WAS THE OPERATION OF A 16-METRE LONG ROBOTIC ARM TO PICK UP THE SATELLITE SPARTAN FROM ITS HOLD IN THE BAY AND RELEASE IT INTO SPACE.



AT THE APPOINTED TIME, KALPANA USED THE ROBOTIC ARM TO RELEASE THE SATELLITE. IT SLIPPED AND SPUN AROUND SO THAT IT COULD NOT BE REORIENTED FOR A STUDY OF THE SUN. UNDER THE GUIDANCE OF THE CAPTAIN AND MISSION CONTROL, THEY TRIED AGAIN.

LATER, KALPANA TRIED TO RECAPTURE THE SATELLITE USING THE ROBOTIC ARM.



THIS IS WHAT WE WERE TRAINED TO DO, IN CASE THE SATELLITE DID NOT FUNCTION PROPERLY.

MISSION CONTROL FROM EARTH THEN THOUGHT OF ANOTHER PLAN.



WINSTON SCOTT AND TAKAO DOI WILL DO A SPACE WALK TO CAPTURE SPARTAN. KALPANA CHAWLA WILL GUIDE THEM THROUGH IT.

THE TWO SPACE WALKERS WERE TRAINED FOR THE TASK OF GRABBING THE 3000-LB SATELLITE.



KALPANA HELPED TO ALIGN THE SATELLITE WITH THE ROBOTIC ARM AND THE \$6 MILLION SATELLITE WAS SAVED.

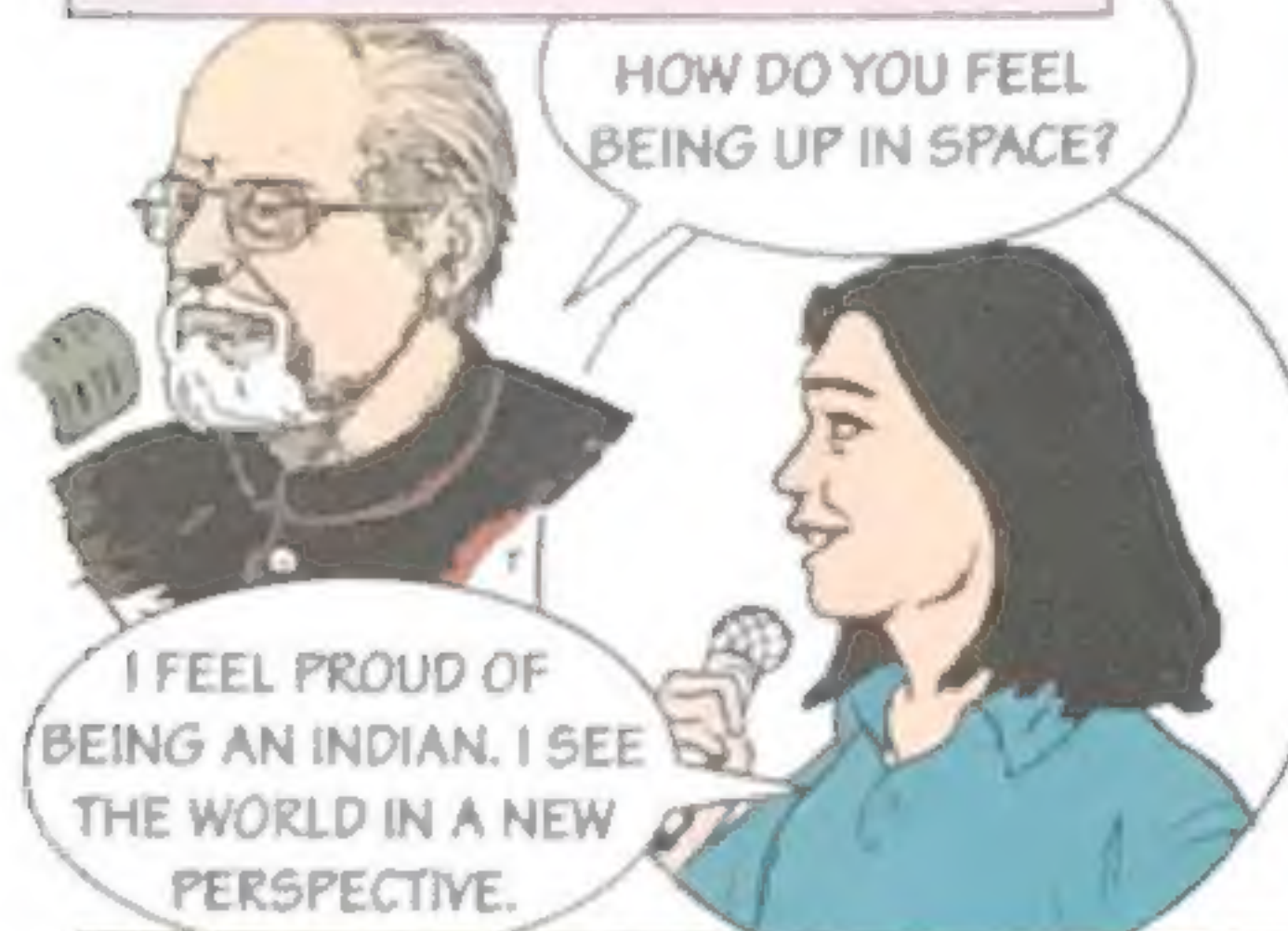
MOST OF THE EXPERIMENTS ABOARD THE STS-87 WERE SUCCESSFUL.



TODAY IS THANKSGIVING DAY. WE HAVE THE TRADITIONAL MEAL OF TURKEY AND PUMPKIN PIE.

I'LL HAVE THE PIE AND JUST THE GRAVY OF THE TURKEY TO JOIN IN THE CELEBRATION.

KALPANA ALSO SPOKE TO THE PRIME MINISTER OF INDIA, MR I. K. GUJRAL.



THEY LOGGED 6.5 MILLION MILES IN 252 ORBITS AROUND THE EARTH IN 376 HOURS AND 34 MINUTES.

ON DECEMBER 5, 1997, THE SHUTTLE RETURNED TO EARTH AND FLOATED DOWN ON THE RUNWAY OF THE KENNEDY SPACE CENTER.



A PROUD FAMILY AND AN ENTIRE NATION CELEBRATED THE SUCCESSFUL FLIGHT OF THE FIRST INDIAN WOMAN IN SPACE.

ON LANDING, SOME OF THE SENIOR OFFICIALS OF NASA SHOOK KALPANA'S HAND WARMLY.



INVESTIGATION PROVED THAT THE ROBOTIC ARM MALFUNCTIONED BECAUSE OF AN INHERENT ERROR IN ITS MECHANISM, AND IN NO WAY WAS IT KALPANA CHAWLA'S FAULT.

RECALLING HER FIRST FLIGHT IN SPACE KALPANA WAS FILLED WITH AWE AND WONDER.



MY GOODNESS! HOW SMALL THIS PLANET IS. YOU FEEL LIKE ALICE IN WONDERLAND. THE COLOURS OF SUNSET AND SUNRISE ARE AWESOME. THE VIEW LENDS A STORY-BOOK FEELING.

IN SPITE OF HER ACHIEVEMENTS, KALPANA WAS MODEST.



AFTER LANDING BACK ON EARTH, THERE WAS A LOT OF WORK TO DO. FOR ABOUT TWO MONTHS, THE CREW TRAVELLED AND SHARED THEIR EXPERIENCES WITH SCHOOLS AND ORGANISATIONS ALL OVER THE WORLD.



AND THE WORST?

ON THE FIRST DAY, YOU DON'T FEEL SO GOOD. THEN YOUR BODY GETS ADJUSTED. COMING BACK TO EARTH IS ALSO HARD, AS IF YOU HAVE BEEN IN A DIFFERENT DIMENSION AND HAVE TO COME AWAY FROM IT. SOMETHING ELSE THAT IS NOT MUCH FUN IS GETTING USED TO THE TOILET FACILITY IN SPACE.

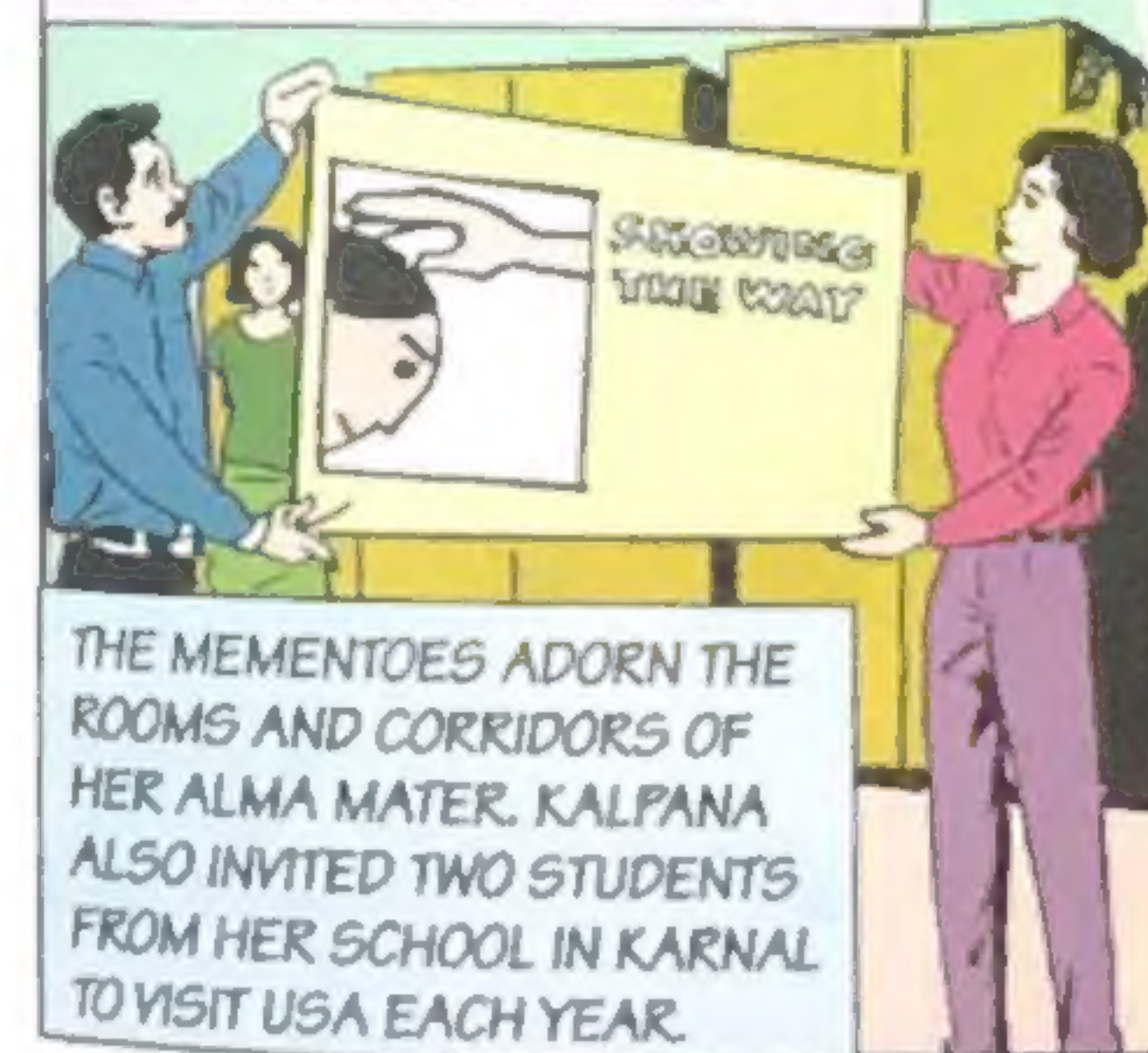


HOW DOES IT FEEL TO BE WEIGHTLESS?

THE CLOSEST THING TO IT ON EARTH IS DIVING. WHERE YOU FEEL YOU ARE BUOYED BY WATER. BUT IN SPACE WEIGHTLESSNESS IS COMPLETELY EFFORTLESS AND JUST A GENTLE PUSH IS ALL YOU NEED TO MOVE. EVEN WITH A BIG TOE TUCKED UNDER A STRAP, YOU CAN STAY IN ONE POSITION AND WORK.



KALPANA SENT MANY BADGES, MEMENTOES AND MESSAGES TO HER SCHOOL AND COLLEGE.



THIS WAS FOR A NASA SPONSORED SPACE EXPERIMENT PROGRAM CONDUCTED BY THE INTERNATIONAL SPACE SCHOOL FOUNDATION EACH SUMMER.



AFTER HER FIRST FLIGHT IN SPACE, KALPANA WAS ASSIGNED GROUND DUTIES.



IT IS NOT USUAL FOR ASTRONAUTS TO GET ANOTHER CHANCE OF GOING INTO SPACE. SO KALPANA WAS SURPRISED WHEN SHE GOT A PHONE CALL FROM MISSION IN-CHARGE.



KALPANA WAS A POPULAR TEAMMATE EVEN IN THE GROUND OFFICE.



FOR THE SECOND FLIGHT, KALPANA WAS SELECTED AS FLIGHT ENGINEER AND MISSION SPECIALIST FOR THE STS-107.



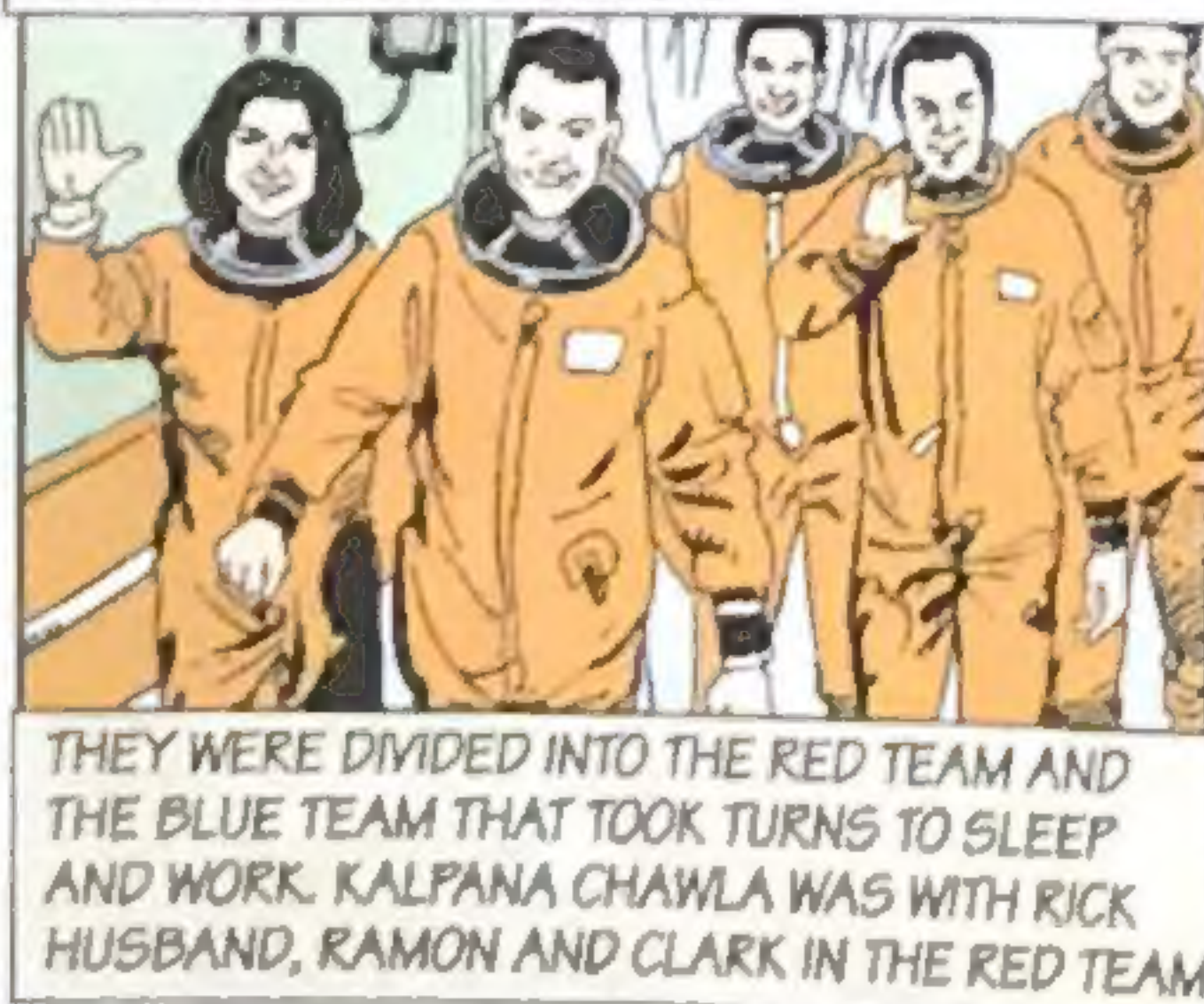
KALPANA HAD SELECTED HER FAVOURITE MUSIC FOR THE FLIGHT.



HER COMPANIONS ON THE SECOND FLIGHT WERE COMMANDER RICK HUSBAND, PILOT WILLIAM MCCOOL, MISSION SPECIALISTS LAUREL CLARK AND DAVID BROWN, PAYLOAD COMMANDER MICHAEL ANDERSON AND PAYLOAD SPECIALIST IAN RAMON.



IT WAS THE 28TH TRIP INTO SPACE OF THE SPACE SHUTTLE COLUMBIA. THE CREW OF STS-107 WAS A WELL-KNIT, CARING BUNCH WITH A GREAT SENSE OF HUMOUR.



THE ASTRONAUTS HAD TO COMPLETE EIGHTY EXPERIMENTS ON BOARD, RANGING FROM GENE TRANSFER IN SEEDS TO STUDYING THE DUST IN THE EARTH'S OZONE LAYER. WITH THE TEAM TAKING TURNS, WORK WENT ON ROUND THE CLOCK.



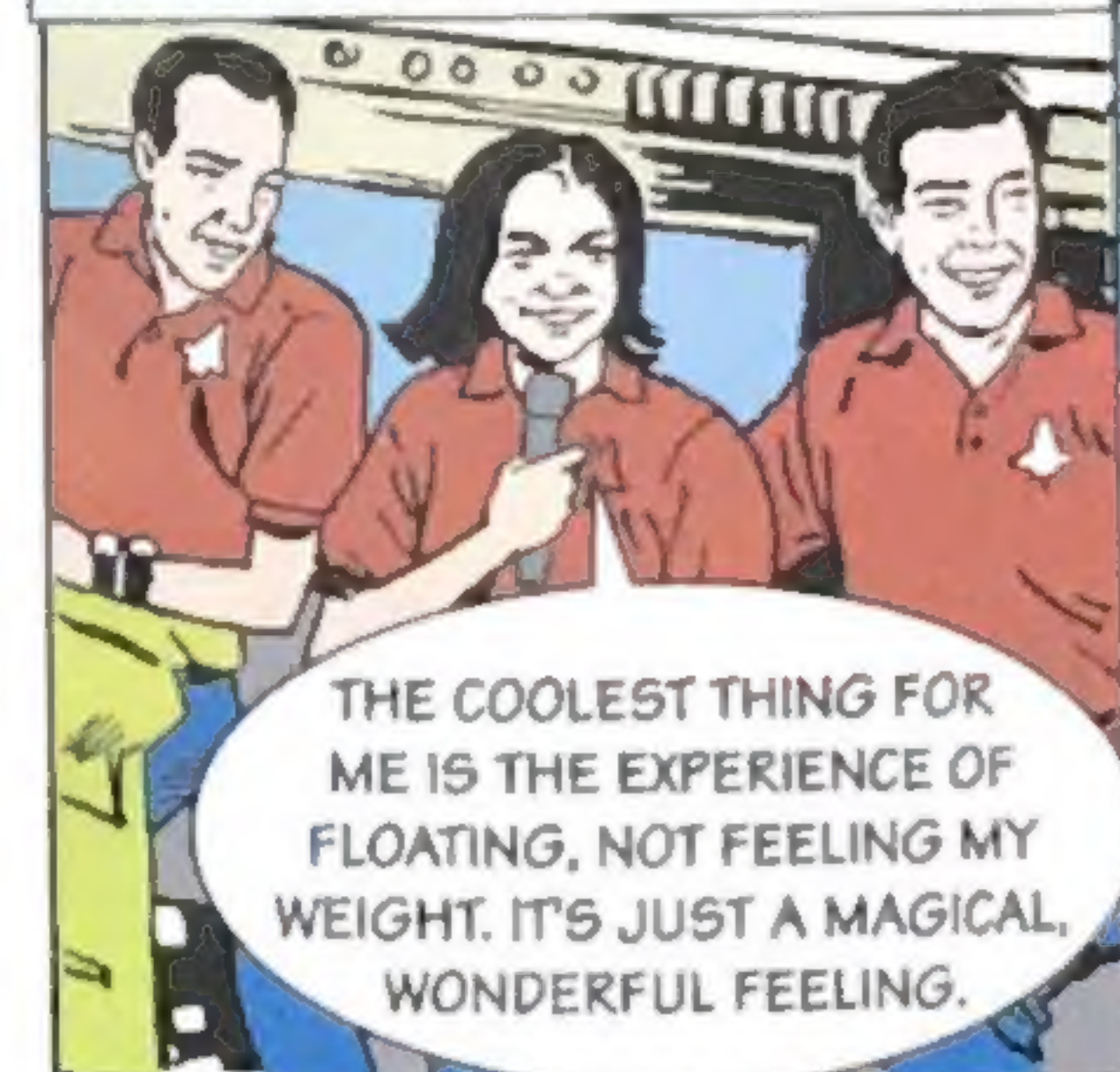
KALPANA'S WAS A BUSY SCHEDULE, SINCE HER DUTIES INCLUDED CHECKING ALL METRES AND DISPLAYS ON BOARD AND MAKING SURE THAT ALL SYSTEMS WORKED.



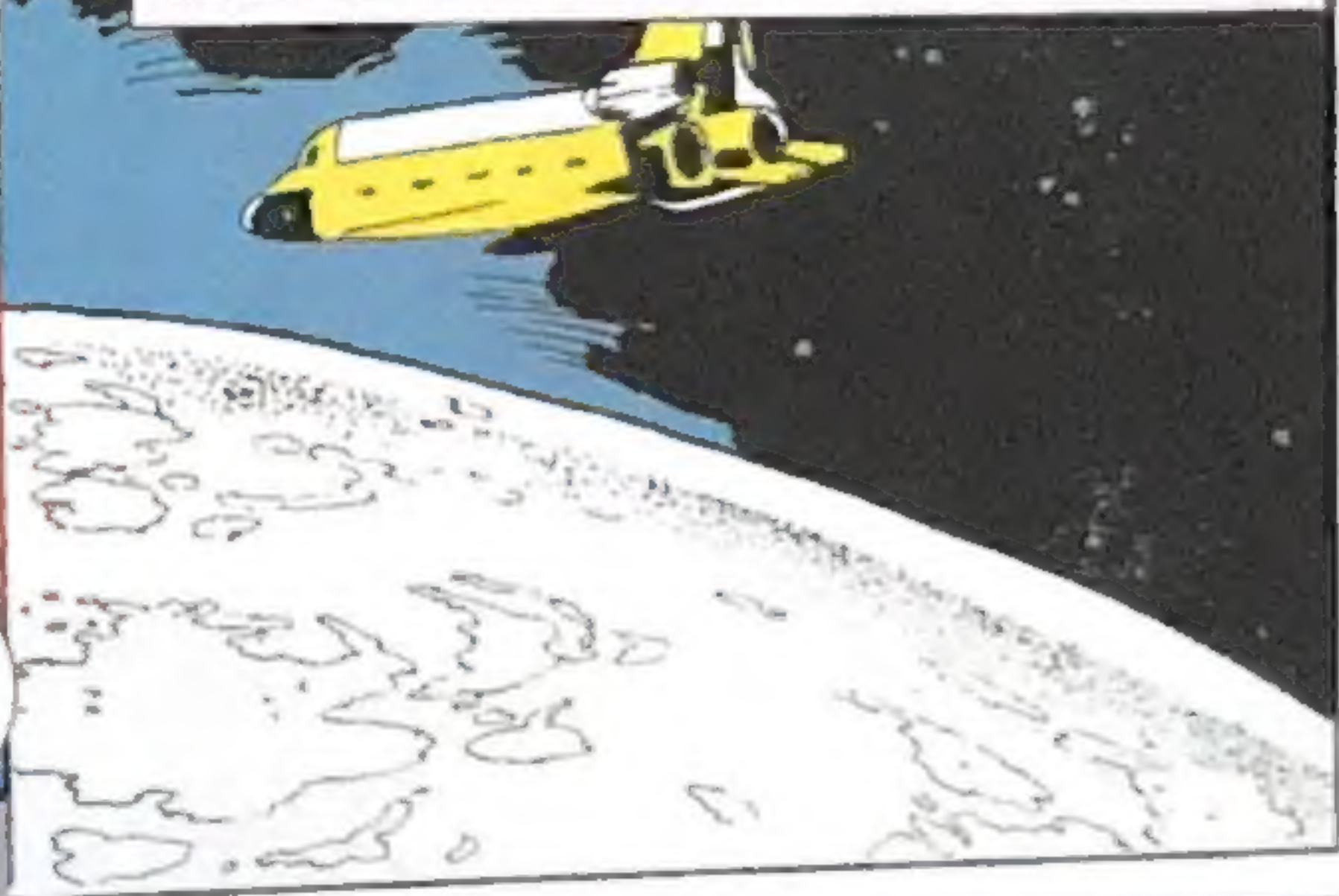
YET AMIDST ALL THE PRESSURE AND WORK, KALPANA MAINTAINED HER SCHOOLGIRL SENSE OF FUN.



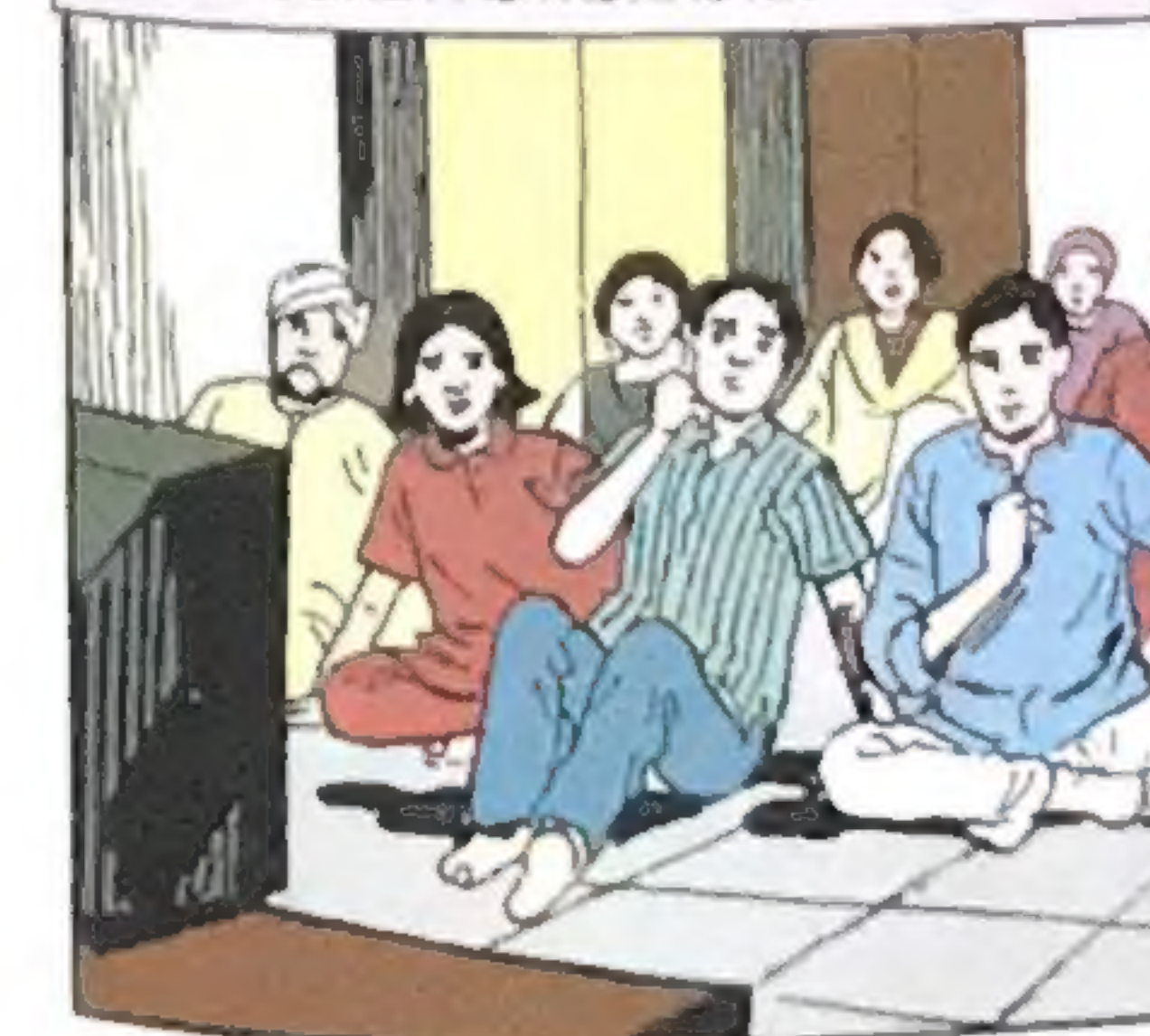
EVERYTHING WAS WORKING PERFECTLY, AND ON JANUARY 29, 2003, KALPANA SAID FROM SPACE:



COLUMBIA SPENT 15 DAYS, 22 HOURS AND 20 MINUTES IN ORBIT. ON FEBRUARY 1, 2003, THE STS-107 WAS SCHEDULED TO RE-ENTER EARTH'S ATMOSPHERE.



IN HER SCHOOL AND COLLEGE, THERE WERE PLANS TO CELEBRATE HER RETURN. THE ENTIRE WORLD AWAITED THE RETURN OF THE SEVEN ASTRONAUTS.



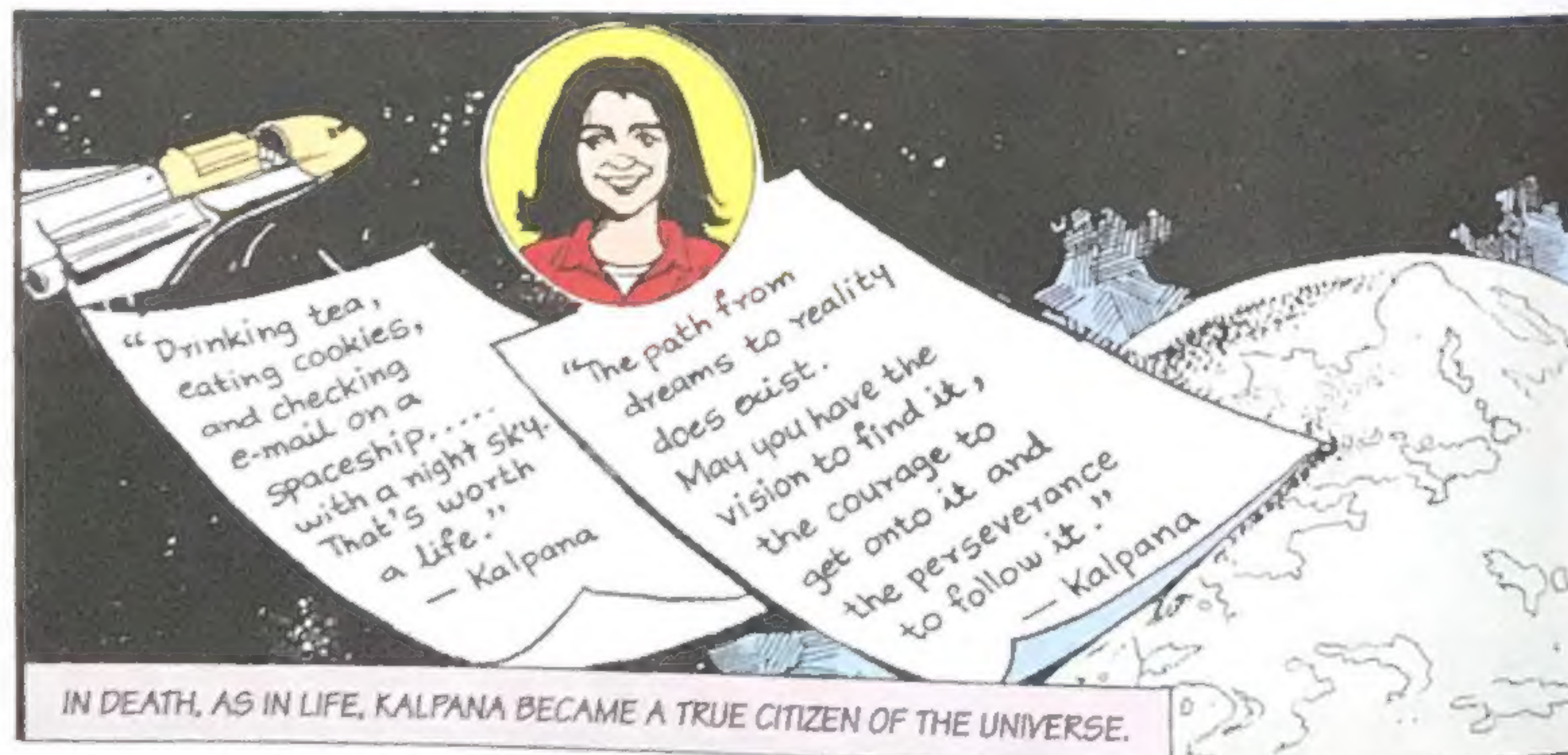
BUT A FEW MINUTES BEFORE LANDING TIME, THE SPACECRAFT BURST INTO FLAMES.



DURING THE LAUNCH ON JANUARY 16, 2003, SOME MATERIAL HAD FALLEN ON THE TILE-COVERED WING OF THE SHUTTLE AND CAUSED A CRACK. AT THAT TIME IT WAS NOT FELT TO BE IMPORTANT.



HOWEVER, AFTER 15 DAYS IN SPACE, ON FEBRUARY 1, A MERE 16 MINUTES BEFORE LANDING TIME, THE CRACK CAUSED A FATAL ACCIDENT. THE SPACECRAFT BROKE APART OVER THE STATE OF TEXAS AND THE SEVEN ASTRONAUTS ABOARD MET A TRAGIC END.



IN DEATH, AS IN LIFE, KALPANA BECAME A TRUE CITIZEN OF THE UNIVERSE.

WHICH OF THE ACKs HAVE YOU STILL NOT READ?

EPICS AND MYTHOLOGY

Best known stories from the Epics and the Puranas

Abhimanyu
Agastya
Andhaka
Aniruddha
Aruni And Uttanka
Ashvini Kumars
Ayyappa
Bahubali
Bhanumati
Bheema And Hanuman
Bheeshma
Chandrasekhar
Dasharatha
Dhruva And Ashtavakra
Draupadi
Drona
Elephanta
Gandhari
Ganesha
Ganesha And The Moon
Ganga
Garuda
Ghatotkacha
Hanuman
Hanuman To The Rescue
Harischandra
Heroes Of Hampi
Indra And Shachi
Indra And Shibi
Indra And Vritra
Jagannatha Of Puri
Jayadratha
Kacha And Devayani
Kama
Karttikeya
Konark
Krishna
Krishna And Jarasandha
Krishna And Narakasura
Krishna And Rukmini
Krishna And Shishupala
Krishna And The False
Vaasudeva
Kubera
Kumbhakarna
Mahabharata
Mahiravana
Nachiketa
Nahusha
Nala Damayanti
Parashurama
Prabhavati
Pradyumna
Prahla
Purushottam Dev And
Padmavati
Rama
Ravana Humbled
Saraswati
Sati And Shiva
Savitri
Shiva Parvati
Stories Of Creation
Subhadra
Sudama
Sukanya
Surya
Tales From The
Upanishads
Tales Of Arjuna
Tales Of Balarama
Tales Of Durga
Tales Of Indra
Tales Of Narada

Tales Of Shiva
Tales Of Vishnu
Tales Of Yudhishtira
Tapati
Thanjavur
The Churning Of The
Ocean
The Gita
The Golden Mongoose
The King In
A Parrot's Body
The Lord Of Lanka
The Pandava Princes
The Pandavas In Hiding
The Parijata Tree
The Sons Of Rama
The Syamantaka Gem
Tirupati
Tripura
Uloopi
Vaishno Devi
Vali
Vishwamitra
Yayati

VISIONARIES

Inspiring tales of thinkers, social reformers and nation builders

Adi Shankara
Albert Einstein
Anant Pai
Babasaheb Ambedkar
Basaveshwara
Buddha
Chaitanya Mahaprabhu
Chanakya
Chokha Mela
Dayananda
Deshbandhu
Chittaranjan Das
Eknath
Fa Hien
Ghanshyamdas Birla
Guru Arjan
Guru Gobind Singh
Guru Har Gobind
Guru Nanak
Guru Tegh Bahadur
Huen Tsang
J.R.D. Tata
Jagadis Chandra Bose
Jamselji Tata
Jawaharlal Nehru
Jayaprakash Narayan
Jim Corbett
Jnaneshwar
Kabir
Kalidasa
Lal Bahadur Shastri
Lokmanya Tilak
M. S. Subbulakshmi
Madhvacharya
Mahavira
Marie And Pierre Curie
Megasthenes
Mirabai
Mother Teresa
Narayan Guru
Rabindranath Tagore
Ram Shastri
Ramana Maharshi
Ramanuja
Salim Ali
Shankar Dev
Soordas
Sri. Ramakrishna
Srinivasa Ramanujan
Subramania Bharati

Swami Chinmayananda
Swami Pranavananda
Tales Of Sai Baba
Tansen
Tulsidas
Vidyasagar
Vivekananda
Zarathushtra

INDIAN CLASSICS

Enchanting tales from Indian literature

Ananda Math
Ancestors Of Rama
Devi Choudhurani
Durgesh Nandini
Kadambari
Kannagi
Kapala Kundala
Kumaran
Maarthaanda Varma
Malavika
Manonmani
Prince Jivaka
Raj Singh
Ratnavali
Shakuntala
The Adventures Of
Pratapana
The Elusive Kaka
Udayana
Urvashi
Vasantasena
Vasavadatta
Veer Dhaval

FABLES AND HUMOUR

Evergreen folktales, legends and tales of wisdom and humour

A Bag Of Gold Coins
Amrapali
Andher Nagari
Angulimala
Bikal The Terrible
BIRBAL STORIES
Birbal The Clever
Birbal The Genius
Birbal The Just
Birbal The Wise
Birbal The Witty
Birbal To The Rescue
The Inimitable Birbal
Chandralalal
Dhola And Maru
Friends And Foes
Gopal And The Cowherd
Gopal The Jester
HITOPADESHA TALES
Choice Of Friends
How Friends Are Parted
Holhat
JATAKA TALES
Battle Of Wits
Bird Stories
Deer Stories
Elephant Stories
Jackal Stories
Monkey Stories
Nandi Vishala
Stories Of Courage
Stories Of Wisdom
Tales Of Misers
The Deadly Feast
The Giant And
The Dwarf
The Hidden Treasure
The Magic Chant

The Mouse Merchant
True Friends
Karwal And Kehar
Kesan The Flying Thief
King Kusha
Manduka

PANCHATANTRA TALES

Crows And Owls
How The Jackal Ate
The Elephant
The Brahmin And
The Goat
The Dullard
The Greedy Mother-in-law
The Jackal And
The Wardrum
Raman Of Tenali
Raman The Matchless Wit
Sahasramalla
Sakshi Gopal
Satwant Kaur
Sharan Kaur
Shrenik
Sukhu And Dukhu
Sundari
Tales Of Maryada Rama
The Acrobat
The Adventures
Of Agad Datta
The Adventures Of
Baddu And Chhotu
The Bridegroom's Ring
The Celestial Necklace
The Clever Dancer
The Cowherd Of Alawi
The Fearless Boy
The Fool's Disciples
The Golden Sand
The Green Demon
The Unhappy Tiger
The Learned Pandit
The Lost Prince
The Magic Grove
The Miraculous Conch
The Mystery Of
The Missing Gift
The Pandit And The
Milkmaid
The Pig And The Dog
The Pious Cat
The Priceless Gem
The Prince And
The Magician
The Prophecy
The Queen's Necklace
The Rainbow Prince
The Secret Of The
Talking Bird
The Silent Teacher
The Tiger And The
Woodpecker
The Tiger Eater
Thugsen
Vidyut Chora
Vikramaditya's Throne

BRAVEHEARTS

Stirring tales of brave men and women of India

A Nation Awakes
Ahilyabai Holkar
Ajatashatru
Akbar
Amar Singh Rathor
Ashoka
Babur
Bagha Jatin
Bajirao I

Baladitya And
Yashodharma
Balban
Banda Bahadur
Bappa Rawal
Beni Madho And Pir Ali
Bhagat Singh
Bidhi Chand
Bimbisara
Chand Bibi
Chandra Shekhar Azad
Chandragupta Maurya
Chennamma Of Keladi
Dara Shukho And
Aurangzeb
Durgadas
Ellora Caves
Hakka And Bukka
Hari Singh Nahwa
Harsha
Hemu
Humayun
Jahangir
Jallianwala Bagh
Kaipana Chawla
Kochunni
Krishnadeva Raya
Kunwar Singh
Lachit Barphukan
Lalitaditya
Mangal Pande
Noor Jahan
Padmini
Panna And Hadi Rani
Paurava And Alexander
Prithviraj Chauhan
Raja Bhoja
Raja Raja Chola
Rana Kumbha
Rana Pratap
Rana Sanga
Rani Abbakka
Rani Durgavati
Rani Of Jhansi
Ranjit Singh
Rash Bihari Bose
Roopmati
Sambhaji
Samudra Gupta
Sea Route To India
Shah Jahan
Shalivahana
Shantala
Sher Shah
Shivaji
Subhas Chandra Bose
Sultana Razia
Surjya Sen
Tachcholi Othenan
Tales Of Shivaji
Tanaji
Tenzing Norgay
The Historic City Of Delhi
The Rani Of Kittur
Tipu Sultan
Veer Hamir
Veer Savarkar
Velu Thampi
Vikramaditya

CONTEMPORARY CLASSICS

(New Category)
The best of modern Indian literature

The Blue Umbrella



Titles available in English and other Regional languages on www.amarchitrakatha.com